Service Manual

ViewSonic PJ513D-1

Model No. VS11959

Multimedia DLP Projector

(PJ513D-1_SM Rev. 1b May. 2009)

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Product disposal at end of product life
The lamp in this product contains mercury. Please dispose of in accordance with local, state or federal laws.

Revision History

Revision	SM Editing Date	ECR Number	Description of Changes	Editor
1a	12/17/2007		Initial Release	Jamie Chang
1b	05/12/2009		Update RS232 PIN definition, IR code	Sophia Kao

TABLE OF CONTENTS

1. Introduction

This section contains general service information, please read through carefully. It should be stored for easy access place.

Important Service Information

Safety Notice

1 Make sure your working environment is dry and clean, and meets all government safety requirements.
2 Ensure that other persons are safe while you are servicing the product.
3 DO NOT perform any action that may cause a hazard to the customer or make the product unsafe.
4 Use proper safety devices to ensure your personal safety.
5 Always use approved tools and test equipment for servicing.
6 Never assume the product's power is disconnected from the mains power supply. Check that it is disconnected before opening the product's cabinet.
7 Modules containing electrical components are sensitive to electrostatic discharge (ESD). Follow ESD safety procedures while handling these parts.
8 Some products contain more than one battery. Do not disassemble any battery, or expose it to high temperatures such as throwing into fire, or it may explode.
9 Refer to government requirements for battery recycling or disposal.

General Descriptions

This Service Manual contains general information. There are 3 levels of service:

Level 1: Cosmetic / Appearance / Alignment Service

Level 2: Circuit Board or Standard Parts Replacement

Level 3: Component Repair to Circuit Boards

2. Specification

1.0 Optical Performance	Tested under 60" (diagonal) image size with Wide projection lens position unless other specified.	
1.1 ANSI Brightness	Minimum 1600 Lumens	
1.2 Brightness Uniformity		
1.2.1 ANSI Uniformity	Minimum 55%	
1.2.2 Upper-Down unbalance	0.5~2	
1.2.3 Left-Right unbalance	0.6~1.67	
1.2.4 JBMA Uniformity	Minimum 60%	
1.3 Contrast Ratio		
1.3.1 ANSI Contrast	Minimum 150:1	
1.3.2 FOFO Contrast	Minimum 1200:1	
1.4 Light Leakage		
1.4.1 Light Leakage in Active Area	<0.5 lux compared to center point within 60" (Diagonal at 2.2m, Wide) image size. Note: This light leakage in Active area is only described as the spot light with obvious shape. It is not included the uniformity difference of the projector for black pattern.	
1.4.2 Light Leakage out of Active Area	<0.65 lux with 54"~80"(Diagonal at 2m, Wide) image size	
1.5 Color		
	X	Y
1.5.1 White	0.312±0.04	0.354±0.04
1.5.2 Red	0.640±0.04	0.345±0.04
1.5.3 Green	0.355±0.04	0.548±0.04
1.5.4 Blue	0.141±0.04	0.087±0.04
1.6 Color Uniformity	X	Y
1.6.1 White	0.040	0.040
1.6.2 Red	0.040	0.040
1.6.3 Green	0.040	0.040
1.6.4 Blue	0.040	0.040
2.0 Image Quality		
2.1 Throw Ratio	54"±5% Diagonal at 2m, Wide	
2.2 Zoom Ratio (tolerance applied)	> 1.10 : 1	
2.3 Distortion		
2.3.1 Keystone Distortion	<1.0%	
2.3.2 Vertical TV Distortion	<1.0%	
2.3.3 Screen distortion	I W2-W1 I <6mm , I H2 –H1 I <6 mm	
2.4 Projection Offset	120% ±5%	
2.5 Focus Range		
2.5.1 Visible Range	1~8 m	

2.5.2 Clearly Focus Range	1.5~6 m(Spec. defined as item 2.6)		
2.6 Focus			
2.6.1 ⊠ Pattern	(1)If pattern can be uniformly focused, pass! (2)If not, check 2.6.2		
2.6.2 Defocus and Flare	Defocus: R<=3.0; G<=2.5; B<=2.5 pixel Flare: R<=4.0; G<=3.5; B<=3.5 pixel Slight flare is not counted as flare.		
2.6.3 Focus unbalance	Adjust focus from near to far until one corner clear, difference less than 70 cm@60”		
2.7 Lateral Color		Center of 49” diagonal area	All other area
	R-G	<2/3	<1
	G-B	<2/3	<1
	R-B	<1	<1
2.8 Image Quality			
2.8.1 DMD Image Quality	-		
2.8.2 Image Imperfection	-		
2.8.3 Image Shadow or Blur	Procedure: 1. 54” (Diagonal at 2m, Wide) image size. 2. Default preset mode “ Dynamic” 3. Full white pattern to check the image. Let the projector on the desk (don’t move it up/down or left/ right) and just inspect the pattern. 4. Compare to the limit sample of OOB. If blur or shadow worse than OOB, than NG		
2.9 Dynamic Contrast Ratio (DCR)	1. When RGB value of content input is smaller than 20%, system will automatically switch to Eco mode, if RGB value is greater than 60%, the projector will back to Normal mode. 2. When DCR function turns on, lamp mode function is grayed out to disable; when DCR function turns off, lamp mode would return to setting value.		
3.0 Mechanical Specification			
3.1 Dimensions	263 x 218 x 108mm (L x W x H)		
3.2 Weight	2.6Kgw ± 0.1Kgw		
3.3 Security Slot	Kensington compatible slot 150N break away force		
3.5 Lens Cover	Detached Lens Cover		
3.6 Feet	Fast adjustable foot in front, Adjustable foot and Fixed foot in rear. foot Tilt:0-6°,right/left: +2.2°/-0.5°		
4.0 Packaging			
4.1 Outside Dimensions	370 x 186 x 297mm (L x W x H)		
4.2 Weight	3.76Kgw ± 0.1Kgw (Including Accessories, Projector).		

4.3 Palletization	72 units by Air; 108 units (pallet A)/72 units (pallet B) by sea 2232 units/40' container, or 1080 units /20' container	
5.0 Thermal Specification	Mechanical component temperature at ambience 0~40℃	
5.1 Surface held or touched for short periods	Normal surface: Metal < 60°C except screws & terminals Plastic<65°C except around ventilation (for this model only) Screw and terminals <55°C	
5.2 Surface which may be touched	Metal	Plastic
	<70°C	<95°C
5.3 Exhaust Air	<95°C around ventilation holes	
6.0 Environmental		
6.1 Temperature	Operating	0~40°C, without condensation
	Storage	-20~60°C, without condensation
6.2 Humidity	Operating	10~90%RH, without condensation
	Storage	10~90%RH, without condensation
6.3 Audible Noise Level	Typical	Normal mode: 32dBA @ 25°C Eco mode: 28dBA @ 25°C
	Maximum	Normal mode: 34BA @ 25°C Eco mode: 30dBA @ 25°C
6.4 Altitude	Operating: 0~6000ft,25°C±5°C 6000ft~10000ft, 25°C±5°C must be operational and the reliability decrease is acceptable (not guarantee Power, Ballast, DMD and lamp life) Storage: 0 to +40000ft sea level(-20 °C to 30°C) Max altitude in 60°C :0-6500ft Max temperature in 10000ft:53°C	
7.0 Regulatory	Safety	CB, CSA, TUV-GS, CCC, PSB, NOM, Korean-eK, Gost-R, Hygiene, SASO, TUV-Argentina, Ukraine, CE
	EMC	FCC Class B requirements, CE
	ESD	Qisda ESD Specification
8.0 Reliability		
8.1 MTBF	40000 hours except DMD chip, Color wheel, Lamp and Ballast	
8.2 Lamp Lifetime	Normal : 2000 hours (50% brightness maintenance) Eco: 3000 hours	
9.0 Power Requirements	Adhere to Appendix 3.5	
9.1 Power Supply (Normal)	VAC 90 – 264 Auto-switch (50/60Hz), 3 Wire Grounded	
9.2 Power consumption	Typical	260 W Max.
	Standby	5W Max.

9.3 Power Connector	IEC-06
10.0 Panel Specification	
10.1 Type	Single Chip 0.55” XGA 12 tilt DDR DMD Single Chip 0.55” SVGA 12 tilt LVDS DMD
10.2 Pixels	800 X 600
10.3 Color Depth	24 Bits (16770000 colors)
11.0 Compatibility	Adhere to Appendix 3
11.1 PC	PC Compatible 640X480 → 800X600, compressed 1024 X 768 1280X1024; Composite-Sync; Sync-on-Green; Interlace Mode (8514A);
11.2 Video	NTSC/ NTSC4.43/ PAL (Including PAL-M, PAL-N)/ SECAM/ PAL60/
11.3 YpbPr	NTSC (480i)/ 480p/ PAL (576i)/ 576p, HDTV (720p/ 1080i)
11.4 DDC	DDC 2B
12.0 Image Interface	Adhere to Appendix 3.2
12.1 Analog RGB Input	15 pin D-Sub (Female) x 1 G(Y): Video amplitude 0.7/1.0 Vp-p : Impedance 75 RB(CbCr): Video amplitude 0.7 Vp-p : Impedance 75 HD/VD/CS: TTL Level
12.2 Video Input	RCA jack (Yellow) Video amplitude 1.0 Vp-p : Impedance 75Ω
12.3 S-Video Input	4 pin Mini-Din (Female) Y: Luminance amplitude 1.0 Vp-p : Impedance 75Ω C: Chroma amplitude 0.268 Vp-p : Impedance 75Ω
12.4 YPbPr Input	15 pin D-Sub (Female) x 1 (Including 12.1) Y: Luminance amplitude 1.0 Vp-p: Impedance 75Ω PbPr/CbCr: Chroma amplitude 0.7 Vp-p : Impedance 75Ω
12.5 DVI-A Input	N/A
12.6 Analog RGB Output	15 pin D-Sub (Female) x 1 G: Video amplitude 0.7/1.0 Vp-p : Impedance 75 RB: Video amplitude 0.7 Vp-p : Impedance 75 HD/VD/CS: TTL Level
13.0 Control Interface	
13.1 IR Receiver	IR Receiver x2 Angle: ±30° Distance 0~8m
13.2 Serial Connector	RS232 8pin Mini DIN
13.3 USB Connector	N/A
14.0 User Interface	Adhere to Appendix 3.3
14.1 Operator Keypad	9 Keys: Power ; Source ; Auto; Left/Blank; Right/Panel key lock ; Mode/Enter ; Up/Keystone+ ; Down/Keystone-; Menu/Exit
14.2 Indicators	3 LEDs: Power On/Off Status; Lamp Status; Temperature Status

14.3 Electric Keystone	vertical keystone and adjustable range 40
15.0 Audio	
15.1 Audio Input	Φ3.5mm stereo mini jack x1 500mVrms, 10kΩ
15.2 Speaker	Sound system: Mono
	Speaker : 2Wx1
	Amplifier: Philips PCA8551
	Frequency Response: 100-20KHz
	Distortion: Amplifier output 1W at 10% distortion
15.3 Audio Output	N/A
16.0 Option Box	
16.1 Wireless function	N/A
16.2 Audio Output	N/A
16.3 LAN function	N/A

DDC Table (EDID FILE)

	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
0	00	FF	FF	FF	FF	FF	FF	00	5A	63
10	20	C5	01	01	01	01	01	11	01	03
20	7A	00	00	78	0A	F1	A7	A5	56	5D
30	88	23	15	52	59	AD	CE	00	45	59
40	31	59	61	59	81	80	01	01	01	01
50	01	01	01	01	A0	0F	20	00	31	58
60	1C	20	28	80	14	00	00	00	00	00
70	00	1E	00	00	00	FF	00	51	54	59
80	30	37	30	31	30	30	30	30	31	0A
90	00	00	00	FD	00	32	57	1E	64	FF
100	00	0A	20	20	20	20	20	20	00	00
110	00	FC	00	50	4A	35	31	33	44	0A
120	20	20	20	20	20	20	00	51		

Address	Data description
00 - 07	Fixed Data(EDID header)
08 - 09	ID Manufacturer Name: VSC = 5Ah 63h (Alphabet number transformed to hex scale from binary)
10 - 11	ID Product Code: 20h, C5h
12 - 15	Not Used
16	Week of Manufacture: 01 (for example; variable)
17	Year of Manufacture: 2007 (for example; variable)
18	EDID Structure Version No.: 1
19	EDID Structure Revision No.: 3
20	Video Input Definition: Analog Signal 0.700V/0.000V Sync: Separate [V] Composite [V] On Green [V] Set up [-] Serration [-]
21 - 22	Maximum Horizontal Image Size: 0cm | Maximum Vertical Image Size: 0cm
23	Display Gamma: 2.2
24	DPMS Supported Feature: Stand by [-] Suspend [-] Active off [-] Display Type: R/G/B color display Standard Default Color Space: unused Preferred Timing Mode: supported GTF supported: not supported
25 - 34	Chroma Information: Red x = 0.634766 y =0.338867 Green x = 0.368164 y = 0.544922 Blue x = 0.147461 y =7.51953e-002 White x = 0.313477 y = 0.34375
35	Established Timing I Support: 720X400 @70Hz [V] 720X400 @88Hz [-] 640X480 @60Hz [V] 640X480 @67Hz [-] 640X480 @72Hz [V] 640X480 @75Hz [V] 800X600 @56Hz [-] 800X600 @60Hz [V]
36	Established Timing II Support: 800X600 @72Hz [V] 800X600 @75Hz [V] 832X624 @75Hz [ ] 1024X768 @87Hz [-] 1024X768 @60Hz [V] 1024X768 @70Hz [V] 1024X768 @75Hz [V] 1280X1024 @75Hz [V-]

37	Established Timing III Support:							
	Reserved	-	Reserved	-	Reserved	-	Reserved	-
	Reserved	-	Reserved	-	Reserved	-	Reserved	-
38 - 53	Standard Timing Identification: #1 60X480 @85Hz #2 800X600 @85Hz #3 1024X768 @85Hz #4 1280X1024 @60Hz #5 Non-Description #6 Non-Description #7 Non-Description #8 Non-Description							
54 - 125	Descriptor Description							
54 - 71	Detailed Timing Description #1: 800x600 @60Hz Pixel Clock = 40.00 MHz Horizontal Image Size = 0 mm Vertical Image Size = 0 mm Refresh mode: Non Interlaced Normal display, no stereo Horizontal Active Time = 800 pixels Blanking Time = 256 pixels Sync Offset = 40 pixels Sync Pulse Width = 128 pixels Border = 0 pixels Frequency = 37.88 kHz Vertical Active Time = 600 lines Blanking Time = 28 lines Sync Offset = 1 lines Sync Pulse Width = 4 lines Border = 0 lines Frequency = 60 Hz Sync configuration: Digital Separate V sync: NEGA H sync: NEGA							
72 - 89	Serial Number (Each word to be transformed in ASCII code)							
90 - 107	Monitor Description Monitor Range Limits: Vertical Frequency (min.) = 50Hz Vertical Frequency (max.) = 87 Hz Horizontal Frequency (min.) = 30 kHz Horizontal Frequency (max.) = 100 kHz Maximum Supported Pixel Clock = 110 MHz GTF Standard is unused.							
108 - 125	Monitor Description Monitor Name: PJ513D							
126	Extension Flag: 0							
127	Checksum: 51 (for example; variable)							

Screw List /Torque

Model name : PJ513D										
	No.	Screw P/N	Description				Q'TY	Torque	Where use
			Type	Head	Length	Coating		(kgf-cm)	
M2.0	1	8F.1A522.6R0	MACH	PHM	6	NI	1	2.5±0.5	Holder adjust foot & Fix block (1*)
M3.0	2	8F.1G524.5R0	MACH	CAP	5	NI	1	4.5±0.5	Engine HSG & Power BD Shielding (1*)
	3	8F.VA564.6R0	TAP (D-PT)	PHM	6	NI	12	5.5±0.5	Blower BKT BTM & Lower Case(2*)
									Ballast & Lower Case(3*)
									Power Board S/W & Lower Case(2*)
									Lamp Box & Lower Case(2*)
								5.5±0.5	Ceiling Mount Plate & Lower Case(3*)
	4	8F.1A524.6R0	MACH	PHM	8	NI	2	4.5±0.5	Lamp Door & Lower Case (2*)
	5	8F.1A524.5R0	MACH	PHM	5	NI	8	4.5±0.5	Blower BKT & Nozzle(1*)
									Main BD Shielding & Power BD Shielding(5*)
									Speaker & Rear Cover (2*)
	6	8F.VA564.100	TAP (D-PT)	PHM	10	NI	4	7.5±0.5	Upper Case & Lower Case(4*)
	7	8F.VG19.8R0	TAP	CAP	8	NI	3	7.0±0.5	Lower Case & Power BD Shielding (3*)
	8	8F.VA564.8R0	TAP (D-PT)	PHM	8	NI	3	6.0±0.5	Engine HSG & Lower Case(3*)
	9	8G.00020.423	NUT	HEX	3	NI	1	2.5±0.5	Rear adjust foot top(1*)
M4.0	10	8F.1D526.6R0	MACH	TAPTILE	8	NI	4	5.5±0.5	AC Wire & Power BD Shielding(1*)
									Ceiling Mount Plate & Lower Case(3*)
#4-40	11	8F.00480.120	MACH	STAND	8	NI	4	4.5±0.5	Rear Case & D-SUB(4*)

1. Timing Table

The Default timing is as following:

Resolution	Mode	Refresh rate (Hz)	H-frequency (kHz)	Clock (MHz)
720 x 400	720x400_70	70.087	31.47	28.322
640 x 480	VGA_60	59.940	31.469	25.175
	VGA_72	72.809	37.861	31.500
	VGA_75	75.000	37.500	31.500
	VGA_85	85.008	43.269	36.000
800 x 600	SVGA_60	60.317	37.879	40.000
	SVGA_72	72.188	48.077	50.000
	SVGA_75	75.000	46.875	49.500
	SVGA_85	85.061	53.674	56.250
1024 x 768	XGA_60	60.004	48.363	65.000
	XGA_70	70.069	56.476	75.000
	XGA_75	75.029	60.023	78.750
	XGA_85	84.997	68.667	94.500
1280 x 1024	SXGA3_60	60.020	63.981	108.000

YPbPr support timing is as following:

Signal format	fh(kHz)	fv(Hz)
480i(525i)@60Hz	15.73	59.94
480p(525p)@60Hz	31.47	59.94
576i(625i)@50Hz	15.63	50.00
576p(625p)@50Hz	31.25	50.00
720p(750p)@60Hz	45.00	60.00
720p(750p)@50Hz	37.50	50.00
1080i(1125i)@60Hz	33.75	60.00
1080i(1125i)@50Hz	28.13	50.00

Video, S-Video support timing is as following:

Video mode	fh(kHz)	fv(Hz)	fsc(MHz)
NTSC	15.73	60	3.58
PAL	15.63	50	4.43
SECAM	15.63	50	4.25 or 4.41
PAL-M	15.73	60	3.58
PAL-N	15.63	50	3.58
PAL-60	15.73	60	4.43
NTSC4.43	15.73	60	4.43

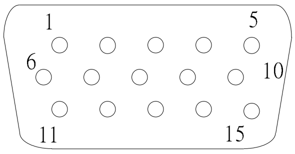
2. Characteristics of inputs/outputs

Signal	Parameter	Min	Type	Max	
RDATA GDATA BDATA	Impedance		75		Ohm
	Amplitude		0.7		Volts peak-to-peak
	Black pedestal		0		Volts
	Pixel Clock		110		M Hz
GDATA_SOG	Impedance		75		Ohm
	Amplitude		1		Volts peak-to-peak
	Video amplitude		0.7		Volts peak-to-peak
	Sync amplitude		0.3		Volts peak-to-peak
	Black pedestal		0		Volts
	Pixel Clock		110		M Hz
HDATA	Impedance		1		K ohm
	Amplitude, low level	0		0.8	volt
	Amplitude, high level	2.5		5	Volt
	Frequency	31		82	K Hz
VDATA	Impedance		1		K ohm
	Amplitude, low level	0		0.8	volt
	Amplitude, high level	2.5		5	Volt
	Frequency	48		85	Hz
SDADATA	Amplitude, low level	0		0.8	volt
	Amplitude, high level	2.5		5	Volt
SCLDATA	Amplitude, low level	0		0.8	volt
	Amplitude, high level	2.5		5	Volt
RXD	Amplitude	-25		25	Volt
TXD	Amplitude	-25		25	Volt
CVBS Luminance	Amplitude, total (video+ sync)		1		Volts peak to peak
	Amplitude, video		0.7		Volts peak to peak
	Amplitude, sync		0.3		Volts peak to peak
	Impedance		75		ohm
CVBS Chroma	Amplitude		300		m Volts peak to peak
	Impedance		75		ohm
Audio	Impedance (audio in)		10		Kohm
	Amplitude (audio in)	0		0.30	Volts rms
	Bandwidth	300Hz		16kHz	
	S/N Ratio		40		%
	Total Harmonic Distortion			10	%

3. Electrical Interface Character

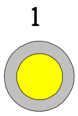
Interface Definition

- 15 pin definition of the mini D-sub male for DDC2B protocol



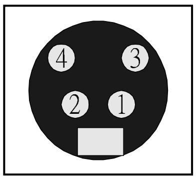
Pin	Definition	Pin	Definition	Pin	Definition	Pin	Definition
1	Red video (Pr)	2	Green Video (Y)	3	Blue Video (Pb)	4	NC
5	NC	6	Red Video Return	7	Green Video Return	8	Blue Video Return
9	NC	10	Sync. Return	11	Monitor ID bit 0	12	Bi-directional data (SDA)
13	Horizontal Sync	14	Vertical Sync	15	Data clock (SCL)		

- Video Input



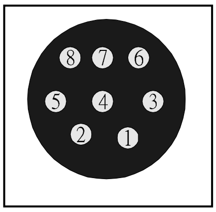
Pin	Definition
1	Composite video input

- S-Video input

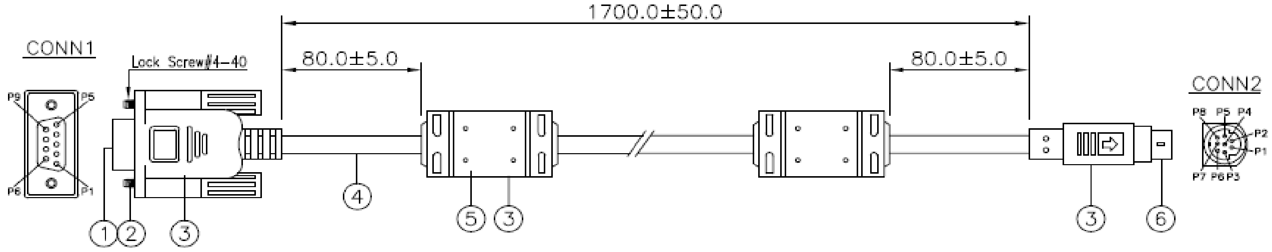


Pin	Description
1	GND
2	GND
3	Luminance
4	Chroma

- Control Port



RS232 cable :



PC side		COLOR of Wire	Projector side	
CONN1	Function name		CONN2	Function name
3	TXD	Black	1	RXD
7	RTS	Brown	2	CTS
4	NC	Red	3	NC
5	GND	Orange	4	GND
8	CTS	Yellow	5	RTS
1	NC	Green	6	NC
2	RXD	Blue	7	TXD
9	NC	White	8	NC
6	NC			

4. Functionality

The Following functionality will be supported: (Detailed description refer to SW Specification)

Functionality	Data (Computer)	Video/S-Video	YPbPr/YCbCr
Preset Mode	YES	YES	YES
Brightness	YES	YES	YES
Contrast	YES	YES	YES
Color	NO	YES	YES
Tint	NO	YES	YES
Sharpness	NO	YES	NO
Color Temp	YES	YES	YES
H. Position	YES	NO	YES
V. Position	YES	NO	YES
H. Phase	YES	NO	YES
H. Size	YES	NO	YES
Keystone	YES	YES	YES
Language	YES	YES	YES
Auto	YES	YES	YES
Image Ratio	YES	YES	YES
Auto Off	YES	YES	YES
Mirror	YES	YES	YES
Source	YES	YES	YES
Freeze	YES	YES	YES
Blank	YES	YES	YES
Lamp Reset	YES	YES	YES
OSD Timer	YES	YES	YES
Source Scan	YES	YES	YES
Keystone Hold	YES	YES	YES
Mirror Hold	YES	YES	YES
Blank Time	YES	YES	YES
Information	YES	YES	YES
Reset	YES	YES	YES

External Message indicator (Detailed description refer to SW Specification)

Message	Occasion
PC/Composite Video /S-Video /Analog YPbPr Searching	The system does not detect the signal
Out of range	The signal is over the specification
NOTICE :Order replacement lamp , Lamp > 2000 hours	Lamp Hour is over 2000 hours
NOTICE: Replacement lamp soon, Lamp > 2950 Hours	Lamp Hour is over 2950 hours
NOTICE: Replacement lamp Now, Lamp > 3000 Hours, Lamp-usage time exceeded.	Lamp Hour is over 3000 hours.

5 Power Supply Specification

5.1. Input Power Specification

Specification	Description
Input Voltage Range	The unit shall meet all the operating requirements with the range 90 ~ 264 VAC
Frequency Range	The unit shall meet all the operating requirements with an input frequency range 50 Hz ~ 60 Hz
Power Consumption	Normal operation: 260 W (Max) standby mode: < 5 W
Regulation Efficiency	80 % (typical) measuring at 115Vac and full load

5.2. Output Power Requirement

The power supply can provide DC output as below：

NO.	Voltage	Regulation	Load Current Range	Ripple & Noise
1	+5 V	±5 %	0.06A ~ 0.5 A	100 mV
2	+12 V	±10 %	0.04 A ~ 1.25A	300 mV

5.3. Lamp Power specifications

Specification	Description
Applicable Lamp	180W, AC operation
Starting pulse from Ignitor	2.5KV

5.4. Others

Item	Description
Power good signal	Active high after 5 Volt reach 95% of its rating and goes to logic low at least 0.5ms before power falls to 90% of its rating
High voltage and high temperature protection	To avoid user from the dangerous of HV and high temperature, when front door of lamp case is opened whether intentionally or accidentally, the power should be disconnected immediately. When the door is closed again, the igniter restart sequence should be compliant to that is described previously

3. Keyboard and Remote Control keys

Local Keyboard Description

Key Name	Detailed Description
Power	Use this button to turn your Data Projector on and off (standby mode).
Source	To select input sources as Computer, Video, S-Video, YpbPr
Auto	Toggle auto-tracking image function
Left/Blank	1. When user presses the button once, the image would turn to blank and show "blank" in the right-button screen. 2. When the image is blank, user press this key back to Normal image; if user presses other buttons on keypad or remove, it would release 3. If there is OSD menu, user can press this key to move to the left item.
Right/Panel Key	1. When user presses the button once, it will enter "Panel key Lock" setting. 2. When panel key is locked, user could press this key for 3 seconds to release Panel Key Lock(If the panel key lock is active, user still could use power key to turn on/off the projector)\ 3. When there is OSD menu, user can press this key to move to the right item
Up/Keystone+	1. When user presses this button once, it will increase the keystone value. 2. When there is OSD menu, user can press this key to move to upper item.
Down/Keystone-	1. When user presses this button once, it will decrease the keystone value. 2. When there is OSD menu, user can press this key to move to next item.
Menu/Exit	1. User could press this button to call OSD 2. When it exists OSD, user could press this button to leave current page to main menu or to close OSD.
Mode/Enter	1. When there is No OSD menu, this button is Mode hot key; user would press this button to choose one of preset modes. 2. When there is confirm messages, user could press this key to confirm selection.

Remote Control Keys Description

IR-Key Name	Detailed Description
Power	Use this button to turn your Data Projector on and off (standby mode).
Source	To select input sources as Computer, YPbPr , Video, S-Video
Menu/Exit	(1) OSD pop-up. (2) Close OSD or leave current page
▸ /Panel Key	(1) Press once, enter ”Panel Key Lock” setting. (2) Press 3 seconds to release “Panel Key Lock”. (3) OSD menu, move to right items
◂	(1) OSD menu, move to left item.
▴ /Keystone+	(1) Keystone+. (2) Move to page level
▾ /Keystone-	(1) Keystone-. (2) Move item bar
Auto	Toggle auto-tracking image function
Mode/Enter	(1) Change different Preset mode (2) Press for confirm message.
Freeze	This button will freeze a picture. Press again to resume motion.
Blank	Press “Blank” key first to blank the screen.
Digital Zoom +	(1) Zoom in (2) Pan the picture , when picture is in Zoom in/out image.
Digital Zoom -	(1) Zoom out (2) Pan the picture, when picture is in Zoom in/out image.

External Status indicator

LED Name	Detailed Description
Power LED	Display the power on/off sequence status
Lamp Status LED	Display the Lamp status (Lamp fail, Lamp spoil etc.)
Temperature Status LED	Display the Thermal status (Fan Fail, Over Temperature, etc.)

4. IR Code / RS232 Command

1. IR Code

CUSTOMER CODE	DATA CODE	FUNCTION
0030	02	POWER
0030	03	II/▶
0030	04	SOURCE
0030	05	TIMER (ON)
0030	06	TIMER (SETUP)
0030	07	BLANK
0030	08	AUTO
0030	0B	▲
0030	0C	▼
0030	0D	◀
0030	0E	▶
0030	0F	MENU
0030	10	MODE
0030	18	DIGITAL ZOOM +
0030	19	DIGITAL ZOOM -

2. RS-232 Command

a. RS-232 connection setting value

Baud Rate: 115200

Parity: None

Data bits: 8

Stop bits: 1

Flow control: None

b. RS-232 command code

Function	Status	Action	cmd
Power	Write	Turn on	0x06 0x14 0x00 0x03 0x00 0x34 0x11 0x00 0x5C
		Turn off	0x06 0x14 0x00 0x03 0x00 0x34 0x11 0x01 0x5D
	Read	Power status(on/off/cool down)	0x07 0x14 0x00 0x05 0x00 0x34 0x00 0x00 0x11 0x00 0x5E
Reset	Excute		0x06 0x14 0x00 0x03 0x00 0x34 0x11 0x02 0x5E
Mirror	Write	Normal	0x06 0x14 0x00 0x04 0x00 0x34 0x12 0x00 0x00 0x5E
		H Inverse	0x06 0x14 0x00 0x04 0x00 0x34 0x12 0x00 0x01 0x5F
		V Inverse	0x06 0x14 0x00 0x04 0x00 0x34 0x12 0x00 0x03 0x61
		H&V Inverse	0x06 0x14 0x00 0x04 0x00 0x34 0x12 0x00 0x02 0x60
	Read	Mirror status	0x07 0x14 0x00 0x05 0x00 0x34 0x00 0x00 0x12 0x00 0x5F
Contrast (only For User Mode)	Write	Contrast decrease	0x06 0x14 0x00 0x04 0x00 0x34 0x12 0x02 0x00 0x60
		Contrast increase	0x06 0x14 0x00 0x04 0x00 0x34 0x12 0x02 0x01 0x61
	Read	Contrast ratio	0x07 0x14 0x00 0x05 0x00 0x34 0x00 0x00 0x12 0x02 0x61

Brightness (only For User Mode)	Write	Brightness decrease	0x06 0x14 0x00 0x04 0x00 0x34 0x12 0x03 0x00 0x61
		Brightness increase	0x06 0x14 0x00 0x04 0x00 0x34 0x12 0x03 0x01 0x62
	Read	Brightness	0x07 0x14 0x00 0x05 0x00 0x34 0x00 0x00 0x12 0x03 0x62
Aspect ratio	Write	Aspect ratio Auto	0x06 0x14 0x00 0x04 0x00 0x34 0x12 0x04 0x00 0x62
		Aspect ratio Native	0x06 0x14 0x00 0x04 0x00 0x34 0x12 0x04 0x01 0x63
		Aspect ratio 4:3	0x06 0x14 0x00 0x04 0x00 0x34 0x12 0x04 0x02 0x64
		Aspect ratio 16:9	0x06 0x14 0x00 0x04 0x00 0x34 0x12 0x04 0x03 0x65
	Read	Aspect ratio	0x07 0x14 0x00 0x05 0x00 0x34 0x00 0x00 0x12 0x04 0x63
Auto Adjust	Excute		0x06 0x14 0x00 0x03 0x00 0x34 0x12 0x05 0x62
Horizontal position	Write	Horizontal position shift right	0x06 0x14 0x00 0x04 0x00 0x34 0x12 0x06 0x01 0x65
		Horizontal position shift left	0x06 0x14 0x00 0x04 0x00 0x34 0x12 0x06 0x00 0x64
	Read	Horizontal position	0x07 0x14 0x00 0x05 0x00 0x34 0x00 0x00 0x12 0x06 0x65
Vertical position	Write	Vertical position shift up	0x06 0x14 0x00 0x04 0x00 0x34 0x12 0x07 0x00 0x65
		Vertical position shift down	0x06 0x14 0x00 0x04 0x00 0x34 0x12 0x07 0x01 0x66
	Read	read Vertical position	0x07 0x14 0x00 0x05 0x00 0x34 0x00 0x00 0x12 0x07 0x66
Color temperature (only For User Mode)	Write	color temperatureT1	0x06 0x14 0x00 0x04 0x00 0x34 0x12 0x08 0x00 0x66
		color temperatureT2	0x06 0x14 0x00 0x04 0x00 0x34 0x12 0x08 0x01 0x67
		color temperatureT3	0x06 0x14 0x00 0x04 0x00 0x34 0x12 0x08 0x02 0x68
		color temperatureT4	0x06 0x14 0x00 0x04 0x00 0x34 0x12 0x08 0x03 0x69
	Read	color temperature status	0x07 0x14 0x00 0x05 0x00 0x34 0x00 0x00 0x12 0x08 0x67
Blank	Write	Blank on/off	0x06 0x14 0x00 0x03 0x00 0x34 0x12 0x09 0x66
	Read	Blank status	0x07 0x14 0x00 0x05 0x00 0x34 0x00 0x00 0x12 0x09 0x68
Keystone-Vertical	Write	Decrease	0x06 0x14 0x00 0x04 0x00 0x34 0x12 0x0A 0x00 0x68
		Increase	0x06 0x14 0x00 0x04 0x00 0x34 0x12 0x0A 0x01 0x69
	Read	Keystone status	0x07 0x14 0x00 0x05 0x00 0x34 0x00 0x00 0x12 0x0A 0x69
Preset mode	Write	Preset mode 0	0x06 0x14 0x00 0x04 0x00 0x34 0x12 0x0B 0x00 0x69
		Preset mode 1	0x06 0x14 0x00 0x04 0x00 0x34 0x12 0x0B 0x01 0x6A
		Preset mode 2	0x06 0x14 0x00 0x04 0x00 0x34 0x12 0x0B 0x02 0x6B
		Preset mode 3	0x06 0x14 0x00 0x04 0x00 0x34 0x12 0x0B 0x03 0x6C
		Preset mode 4 (PC User I)	0x06 0x14 0x00 0x04 0x00 0x34 0x12 0x0B 0x04 0x6D
		Preset mode 5 (PC User II)	0x06 0x14 0x00 0x04 0x00 0x34 0x12 0x0B 0x05 0x6E
	Read	Preset mode status	0x07 0x14 0x00 0x05 0x00 0x34 0x00 0x00 0x12 0x0B 0x6A
Freeze	Write	Freeze on/off	0x06 0x14 0x00 0x03 0x00 0x34 0x13 0x00 0x5E
	Read	Freeze status	0x07 0x14 0x00 0x05 0x00 0x34 0x00 0x00 0x13 0x00 0x60
Source input	Write	Input source VGA	0x06 0x14 0x00 0x04 0x00 0x34 0x13 0x01 0x00 0x60
		Input source YPbPr	0x06 0x14 0x00 0x04 0x00 0x34 0x13 0x01 0x04 0x63
		Input source Composite	0x06 0x14 0x00 0x04 0x00 0x34 0x13 0x01 0x05 0x65
		Input source SVIDEO	0x06 0x14 0x00 0x04 0x00 0x34 0x13 0x01 0x06 0x66
	Read	Source	0x07 0x14 0x00 0x05 0x00 0x34 0x00 0x00 0x13 0x01 0x61
Source scan	Write	Source scan on	0x06 0x14 0x00 0x04 0x00 0x34 0x13 0x02 0x01 0x62
		Source scan off	0x06 0x14 0x00 0x04 0x00 0x34 0x13 0x02 0x00 0x61
	Read	Source scan status	0x07 0x14 0x00 0x05 0x00 0x34 0x00 0x00 0x13 0x02 0x62
Mute	Write	Mute on	0x06 0x14 0x00 0x04 0x00 0x34 0x14 0x00 0x01 0x61
		Mute off	0x06 0x14 0x00 0x04 0x00 0x34 0x14 0x00 0x00 0x60
	Read	Mute status	0x07 0x14 0x00 0x05 0x00 0x34 0x00 0x00 0x14 0x00 0x61

Volume	Write	Increse Volume	0x06 0x14 0x00 0x03 0x00 0x34 0x14 0x01 0x60
		Decrese Volume	0x06 0x14 0x00 0x03 0x00 0x34 0x14 0x02 0x61
	Read	Volume	0x07 0x14 0x00 0x05 0x00 0x34 0x00 0x00 0x14 0x03 0x64
Language	Write	English	0x06 0x14 0x00 0x04 0x00 0x34 0x15 0x00 0x00 0x61
		Français	0x06 0x14 0x00 0x04 0x00 0x34 0x15 0x00 0x01 0x62
		Deutsch	0x06 0x14 0x00 0x04 0x00 0x34 0x15 0x00 0x02 0x63
		Italiano	0x06 0x14 0x00 0x04 0x00 0x34 0x15 0x00 0x03 0x64
		Español	0x06 0x14 0x00 0x04 0x00 0x34 0x15 0x00 0x04 0x65
		РУССКИЙ	0x06 0x14 0x00 0x04 0x00 0x34 0x15 0x00 0x05 0x66
		繁體中文	0x06 0x14 0x00 0x04 0x00 0x34 0x15 0x00 0x06 0x67
		简体中文	0x06 0x14 0x00 0x04 0x00 0x34 0x15 0x00 0x07 0x68
		日本語	0x06 0x14 0x00 0x04 0x00 0x34 0x15 0x00 0x08 0x69
		한국어	0x06 0x14 0x00 0x04 0x00 0x34 0x15 0x00 0x09 0x6A
		Swidish	0x06 0x14 0x00 0x04 0x00 0x34 0x15 0x00 0x0a 0x6B
		Dutch	0x06 0x14 0x00 0x04 0x00 0x34 0x15 0x00 0x0b 0x6C
		Turkish	0x06 0x14 0x00 0x04 0x00 0x34 0x15 0x00 0x0c 0x6D
		Czech	0x06 0x14 0x00 0x04 0x00 0x34 0x15 0x00 0x0d 0x6E
		Portugese	0x06 0x14 0x00 0x04 0x00 0x34 0x15 0x00 0x0e 0x6F
		Thai	0x06 0x14 0x00 0x04 0x00 0x34 0x15 0x00 0x0f 0x70
		Polish	0x06 0x14 0x00 0x04 0x00 0x34 0x15 0x00 0x10 0x71
	Read	Language	0x07 0x14 0x00 0x05 0x00 0x34 0x00 0x00 0x15 0x00 0x62
Lamp Time	Write	Reset Lamp usuage hour	0x06 0x14 0x00 0x03 0x00 0x34 0x15 0x01 0x61
	Read	Lamp usuage hour	0x07 0x14 0x00 0x05 0x00 0x34 0x00 0x00 0x15 0x01 0x63
error status	Read		0x07 0x14 0x00 0x05 0x00 0x34 0x00 0x00 0x15 0x02 0x64

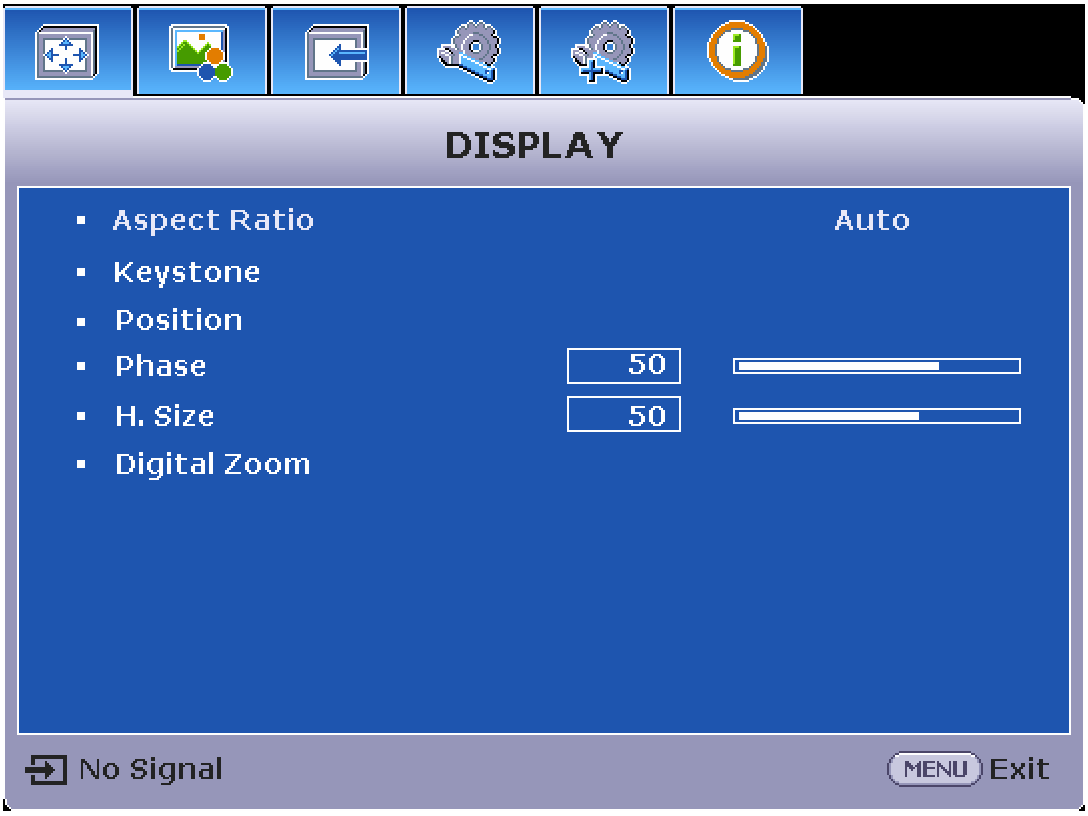
Error code table

To send Hex code "error status" read "0x07 0x14 0x00 0x05 0x00 0x34 0x00 0x00 0x15 0x02 0x64". User can get 20 byte data which mapping to below error status and the number means how many time the error appeared.

Byte	Error Name	Description
0	LampFailCount	Lamp turn on fail
1	Fan1ErrorCount	Fan1 fail (lamp fan)
2	Fan2ErrorCount	Fan2 fail (power fan)
3	Fan3ErrorCount	Fan3 fail (blower fan)
4	Fan4ErrorCount	Fan4 fail (The model without 4 fans without this error count)
5	Diode1OpenErrorCount	Thermal sensor 1 lose connection
6	Diode2OpenErrorCount	Thermal sensor 2 lose connection
7	Diode3OpenErrorCount	Thermal sensor 3 lose connection (The model without thermal sensor 3 is no function for this address)
8	Diode1ShortErrorCount	Thermal sensor 1 short (inlet sensor which located at main board)
9	Diode2ShortErrorCount	Thermal sensor 2 short (power board temperature sensor)
10	Diode3ShortErrorCount	Thermal sensor 3 short (The model without thermal sensor 3 is no function for this address)
11	Temperature1ErrorCount	Thermal sensor 1 detect temperature over system limitation (inlet sensor which located at main board)
12	Temperature2ErrorCount	Thermal sensor 2 detect temperature over system limitation (power board temperature sensor)
13	Temperature3ErrorCount	Thermal sensor 3 detect temperature over system limitation (No used)
14	FanIC1ErrorCount	Fan IC 1 fain (G743 or G794)
15	FanIC2ErrorCount	No used
16	WatchdogCount	The DDP2230 internal F/W watchdog function executed
17	AbnormalPowerdown	The user turn off unit without finish cooling process
18	CWErrorCount,	Color wheel do not spin
19	FirstBurnInErrorMinutes	The timeframe from burn-in to 1st time shutdown in minute.

4. Method to enter factory menu:

a) Press **Menu** on keypad than the main menu popup



b) When showing main menu, press **Source + Mode** at the same time

c) Factory menu popup at the top-left of display

5. Adjustment Procedure

Visual Inspection & Cleaning

<u>**Visual Inspection Criteria**</u>

1.0 Inspection zone definition and inspection distance

A-side: Up case - Up case surfaces except right / left / behind side's surface.
Front cover - Front cover surface

B-side: Side - right/left sides surfaces
Back cover - Back cover surfaces

C-side: Low cause - bottom surfaces

- **For spot inspection distance is 45 cm on A/B/C-side. And inspection time is 10 sec.**
- **For scratch inspection distance is 45 cm on A/B/C-side. And inspection time is 10 sec.**

1.1 Appearance Inspection Criteria

1.1.1 Environment Condition

1.1.1.1 Lighting intensity

All appearance quality shall be inspected with the lighting condition as 500~800Lux (natural lighting or white fluorescent light).

1.1.1.2 Inspection angle and distance to object or target

All part inspection must be done under direct overhead lighting. Viewing angle and distance are dependent on surface classification. In all cases, parts must be held in such that the light reflection does not disturb the inspector's eye.

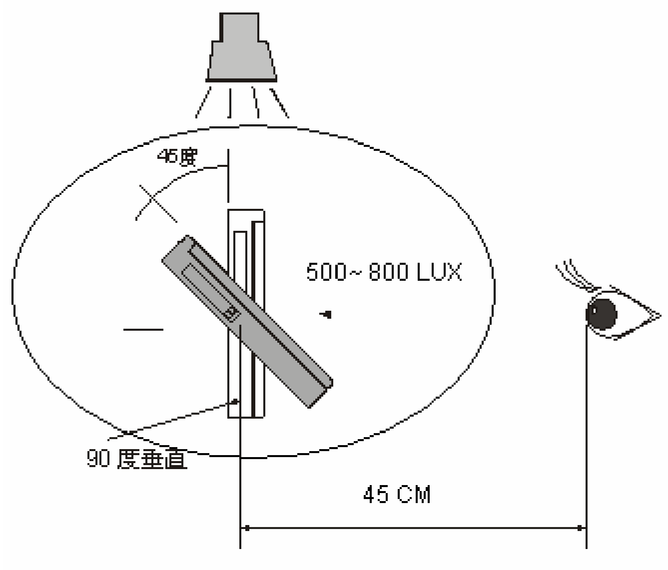


Figure 1

Table 1

Classification	Area A	Area B	Area C
Lighting positioning	Above of inspected part		
Inspection position relative to part	90º	90º	90º
Inspection distance	40~50 cm	40~50 cm	40~50 cm

1.1.1.3 Inspection interval (time)

Inspection interval is a function of surface area.

Time for visual inspection: 10sec.

Table 2

Parts Size	"A" surface	"B" surface	"C" surface
Time	10 sec	10 sec	10 sec

TABLE 3 General Product of plastic outlook of dot, blemish, and others spec inspection standard

	Spec (Area cm2)	A surface (Number of defect)				B surface (Number of defect)				C surface (Number of defect)			
		20*20	50*50	70*70	100*100	20*20	50*50	70*70	100*100	20*20	50*50	70*70	100*100
Particle Blemish | Color spot	P < 0.2 mm2 Distance ≥ 2cm	Ignore	Ignore	Ignore	Ignore	Ignore	Ignore	Ignore	Ignore	Ignore	Ignore	Ignore	Ignore
	0.2≦P< 0.3 mm2 Distance ≥ 4cm	2	3	4	5	2	3	4	5	4	4	5	6
	0.3≦P <0.4mm2 Distance ≥ 4cm	0	0	0	0	2	3	4	5	3	4	5	6
Particle | Spot with same color	P<0.1 mm2 Distance ≥ 2cm	Ignore	Ignore	Ignore	Ignore	Ignore	Ignore	Ignore	Ignore	Ignore	Ignore	Ignore	Ignore
	0.1≦P<0.2mm2 Distance ≥ 4cm	4	4	5	6	5	5	6	7	6	6	7	8
	0.2≦P < 0.3mm2 Distance ≥ 4cm	3	4	4	5	4	5	5	6	6	7	7	8
	0.3≦P < 0.5mm2 Distance ≥ 5cm	2	2	3	4	3	3	4	5	4	4	5	6
	Total	4	4	5	6	5	5	6	7	6	6	7	8

Note:

1. Use the 20*20 criteria to the area less than 20*20; 50*50 inspection criteria to the area 20*20≦A<50*50; etc. (Particle/Blemish/Color Spot)

1.1 Definition of surface A, B, C refer to 6.2

1.2 Blemish around the ViewSonic Bird logo, name plate and silk screen must be equal or smaller than 0.05 mm^2

1.3 Bubble on the surface is to be reject.

TABLE 2 : General Product of plastic outlook inspection standard

NO	Appearance	Spec
1	Shrinkage	A region: No Shrink. With gloves, no feeling of sink when touching the surface B/C region: not obvious
2	Run, Texture, Gloss	No obvious non-uniformity
3	Welding Line/Knit Line	Follow limit sample level
4	Ejector Mark	Reject
5	Label/screws shortage	Reject
6	Material shortage	Not allow, Reject
7	Chromatic aberration	Follow engineering specification
8	Printing	Printing must not have incomplete printing, break off, overlap, uneven thickness, excessive ink, printing misalignment (1.5mm), printing slanting & crooked (<0.5mm) Printing color must be comparable to color chip and sample. Follow engineering specification
9	Logo of panel sticker	Printing must not have incomplete printing, break off, overlap, uneven thickness, excessive ink, printing misalignment (1mm), printing slanting & crooked (<0.5mm) Printing color must be comparable to color chip and sample.
10	Scratch/Nicks	Side A: (W < 0.1mm , L < 5mm): Only 2 this kind of scratch is accepted W < 0.1mm , L < 5-10mm :Only 1 this kind of scratch is accepted Side B: W < 0.2mm , L < 5mm : Only less than 2 this kind of scratch is accepted W < 0.2mm , L < 5-10mm : Only 1 this kind of scratch is accepted Side C: W < 0.3mm , L < 5mm : Only 3 this kind of scratch is accepted W < 0.3mm , L < 5-10mm : Only 2 this kind of scratch is accepted W < 0.3mm , L < 10-15mm: Only 0 this kind of scratch is accepted Note: 1. Severe scratch which disclose the Natural 2. When light scratching on it, there’s no feeling of obstruction. Also, there should not be obvious difference in gloss nearby it. 3. Each scratch should be 5cm more far away from each other 4. Front case must be no any scratch

PART II Operational Inspection Criteria

TEST CONDITIONS

Unless other prescription, the test conditions are as followings:

Nominal voltage: refer to operation manual

Environmental illumination:

Variable from 500 to 800 Lux (For appearance inspection)

Variable from 0 to 7 Lux (For functional inspection)

Temperature: 25±5℃

Visual inspection shall be done with the distance from eyes to the sample 45 cm.

Display mode: refer to operation manual

TEST EQUIPMENTS

Dark room

PC

Pattern Generator: Chroma 2327 or equivalent

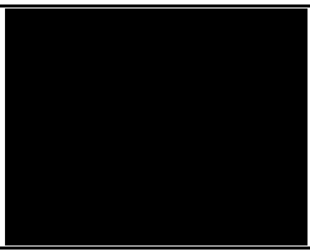
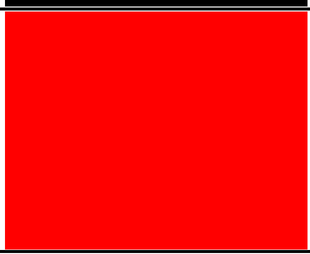
Minolta color analyzer CL200 or equivalent device with accredited traceability

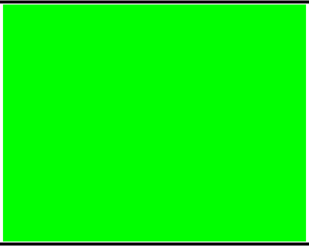
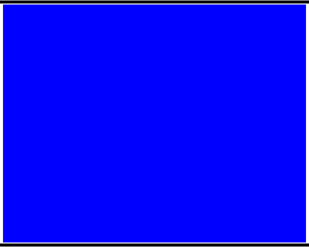
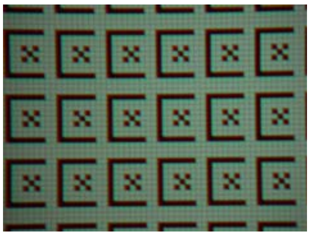
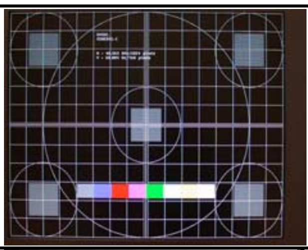
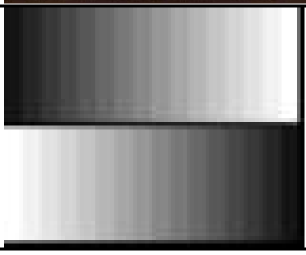
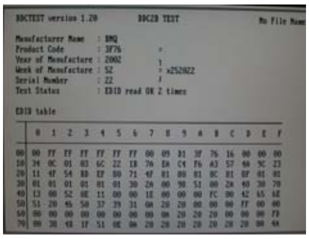
DVD player

Power supply (100~240 VAC) with consumption meter

Measuring tape

TEST PATTERN

PATTERN	PATTERN	TEST ITEM	Acceptance Criteria
Full white		ANSI Brightness、Bright Uniformity、FOFO Contrast Ratio、	(1) ANSI Brightness:(Normal Mode) 1600lm (2) Uniformity: ANSI: 55% (Minimum) (3) Contrast Ratio : 150:1 (Minimum, by ANSI Standard Checkerboard Method), 1200:1(by All White, All Black Method) (4) White Point, Color :x = 0.312±0.04, y = 0.354±0.04
Full Dark		FOFO Contrast Ratio	Contrast Ratio : 1200:1(by All White, All Black Method)
Full Red		Impurity、CIE coordinate	Chromaticity : Red: x =0.640±0.04, y= 0.345±0.04

Full Green		Impurity、CIE coordinate	Chromaticity : Green: x =0.355±0.04, y=0.548±0.04
Full Blue		Impurity、CIE coordinate	Chromaticity : Blue: x =0.141±0.04, y= 0.087±0.04
Chromo 800x600		Focus Range	(1)Background lines should be distinguishable. (2)"⊠":Letter shape and lines should be distinguishable.
General-1 pattern		Performance/ Timing check/ function check	(1)Phase should be stable(no flick) (2)Whole frame should appear.
16 Gray and Color bar		Gray and Color bar Check	No lack or mix color
DDC check		Check the DDC information, Including S/N, model, manufacturer name, product code.	S/N(08-09): with numbers Model(108-125) with numbers(ref Appendix DDC table) manufacturer name(08-09):5A63 product ID code (10-11): 20C5

Software/Firmware Upgrade Process

How to Download Firmware

Hardware required

1. Standard RS-232 Download cable
2. Personal computer or laptop computer

Software required

1. DDP2230 Composer lite
2. New version FW

DDP2230 Composer lite install procedure

Installation Location

The default installation directory is:

C:\Program Files\DLP Composer Lite 7.0

If you want to install to a different directory (perhaps alongside a prior release of DLP Composer™ Lite), click the "Browse" button on the "Select Features" page..

USB Support - Installation (All Platforms)

This release includes support for a USB communications interface to DDP2230-based projectors. The setup program includes the files needed to install USB support (for Win98/WinMe/Win2K/WinXP only -- Win95 and WinNT are *not supported*).

After DLP Composer™ Lite is installed, to install the USB support, choose the "Install DDP2230 USB Driver" icon under "DLP Composer™ Lite" in your ***Start*** menu.



USB Support - Win98/Me/XP Only

Installation on Windows 98/Me//XP may prompt "Please insert the disk labeled 'DLP Composer Installation Directory', and then click OK". This message may be safely ignored by **clicking the OK button**.

Another prompt will then appear: "The file 'windrvr6.sys' on DLP Composer Installation Directory cannot be found". Again, **click OK** and the installation proceeds without further problems.

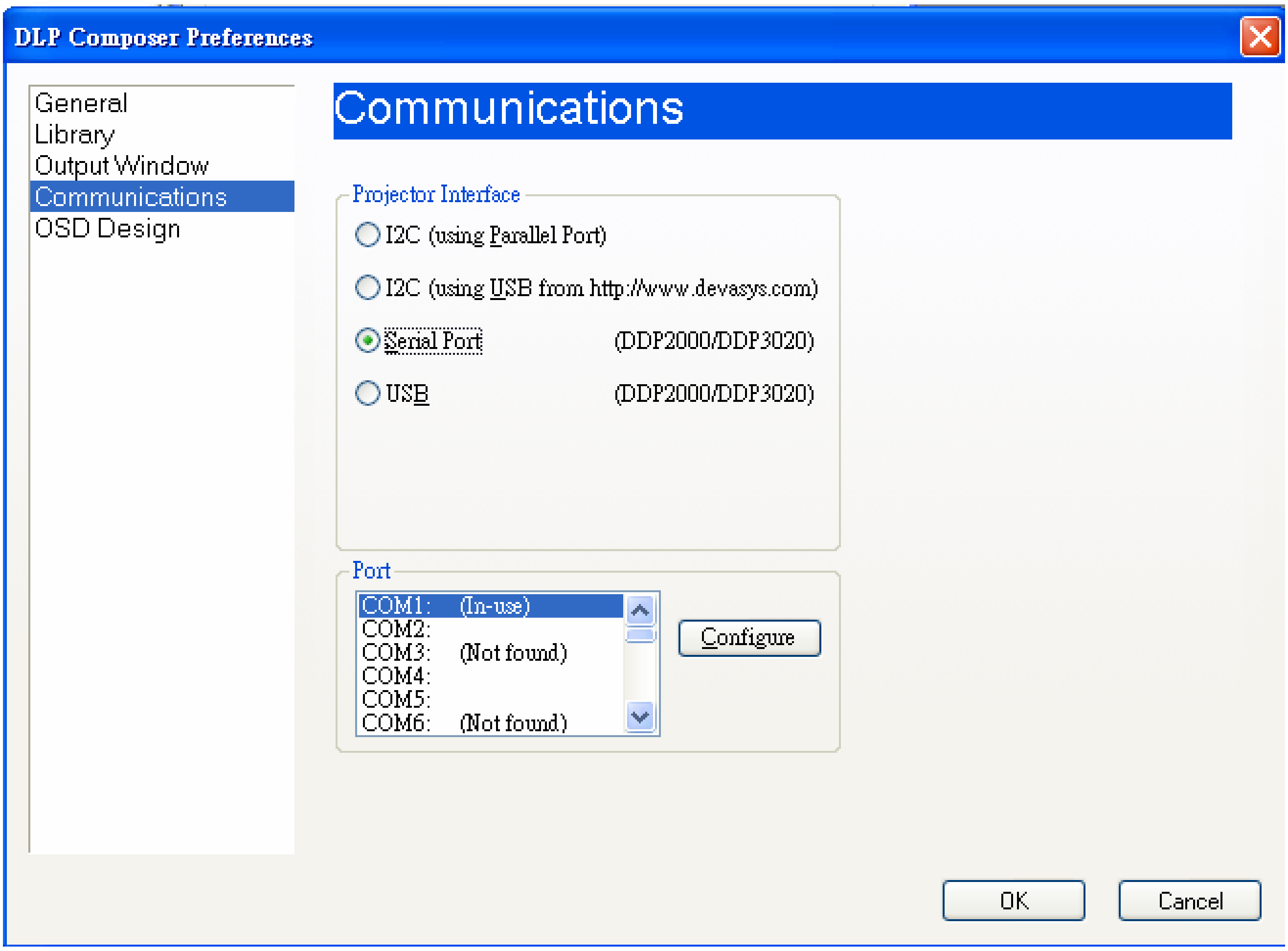
USB Support - Using a projector for the first time

After installation is complete, and you plug a DDP2230-based projector into USB for the first time, Windows will run the "*New Hardware Wizard*". When the wizard prompts to find the necessary drivers, accept the recommended choice (let the system find the driver for you) and click "Next" to complete the installation.

Note: The Windows 98/Me/XP "New Hardware Wizard" may not automatically find the driver. You should use the "Advanced" option, and enter the directory where the DLP Composer™ Lite Tool Suite was installed (normally "C:\Program Files\DLP Composer Lite"). The wizard will find the file "DDP2230.inf" and complete the installation.

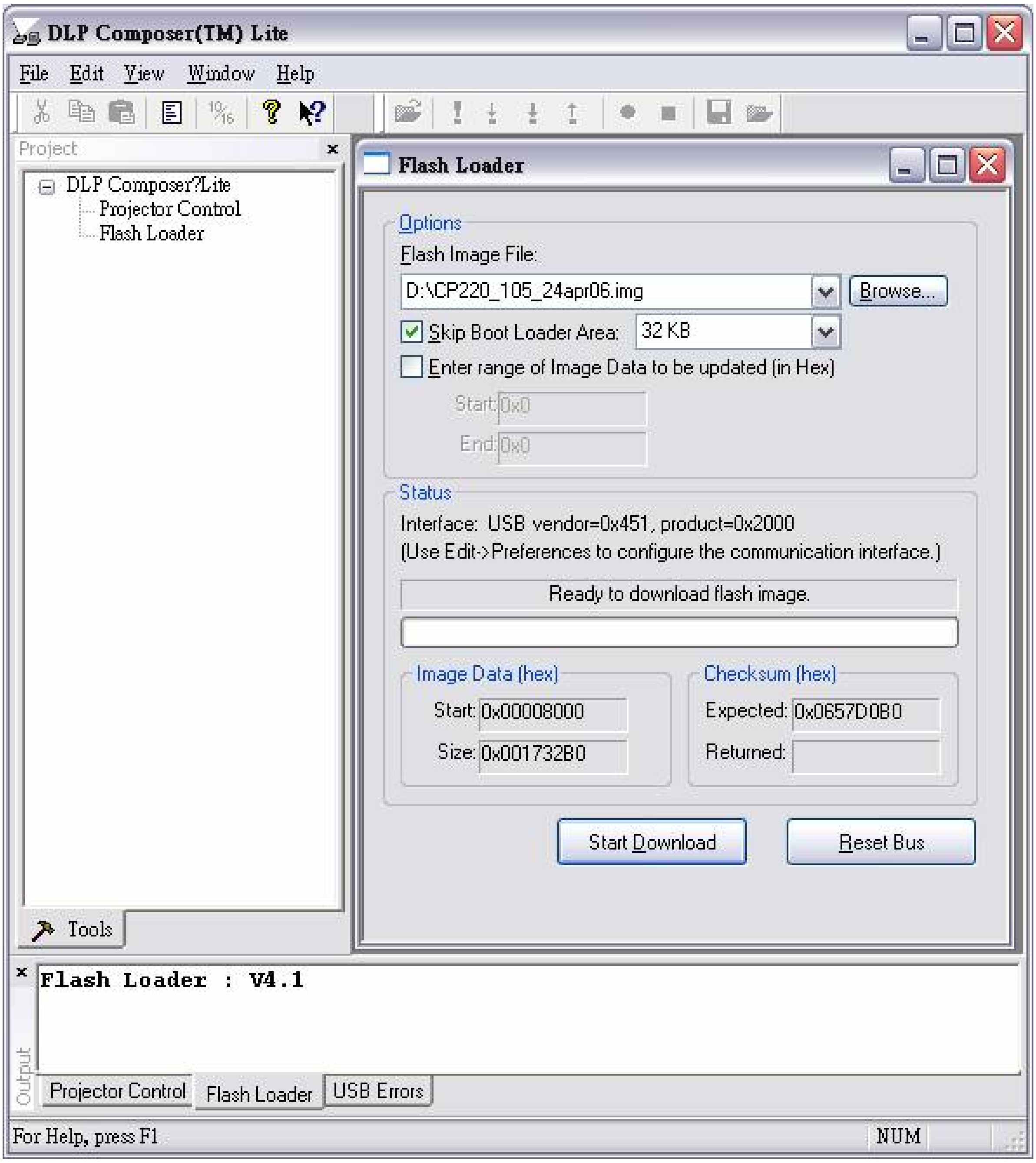
USB Support - Choosing the USB interface

To select the USB communications interface, choose "Preferences" from the "Edit" menu, click the "Communications" page and choose "USB (DDP2000/DDP3020 Only)". You can now use DLP Composer™ Lite to communicate with a DDP2230-based projector via USB using the Flash Loader tool.



Download procedure

1. Click on Flash Loader and browse the image file (new version firmware)
2. Make sure to check "Skip Boot loader area (load all but the first 32KB)"
3. Plug power cord into projector
4. Plug in RS-232 cable between computer and projector side
5. Press start download to begin update new firmware



6. Wait till composer lite notice upgrade completed
7. Download is completed. The factory settings should be restored.

1. EE Assembly and Alignment Concern:

1. Color Wheel Delay Alignment

Equipment:

- Battery Biased Silicon PIN Detector
- Oscilloscope
- Probe

OSD Default value:

Item	Value	Item	Value
DLP Brightness	32	CW Delay	Adjustable
DLP Contrast	32		
White Peak	10		

The default values let optical engine to get maximum contrast and brightness.

Procedure:

Probe impedance matches 50 ohm

Open Factory OSD, and select color wheel delay item

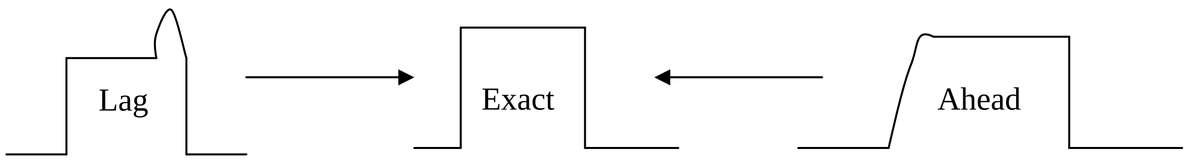
Leave the image pure red (DMD red curtain)

Put the detector on the screen that red image was projected.

Watch the oscilloscope and notice the square waveform

Use the "→" and "←" key to increment or decrement the color wheel delay value

No matter the waveform is square or not, let the waveform was lagged first



Then increment or decrement the value to let the waveform to be square

Do not adjust too much, let the signal get ahead, if it happens, go back to step 7 and do it again.

Change the input to pure blue and repeat the above procedures again.

Change the input to pure green and repeat the above procedures again.

2. Main board check procedure

Equipment:

- Pattern generator

Procedure:

1. Connect power, D-sub into projector.
2. Light on projector.
3. Testing below patterns and resolution is 854*480@60Hz (480P)
   (1) General-1 pattern. (Pattern 1)
   (2) 32 grays pattern. (Pattern 48)
   (3) White pattern. (Pattern 41)

(4) SMPTE pattern. (Pattern 5)

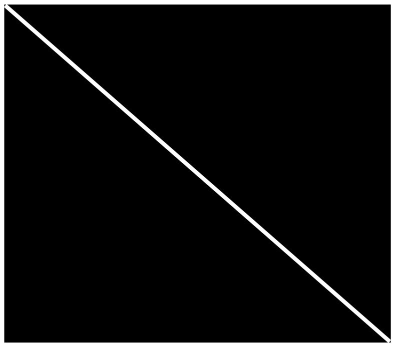
4. The main board would be note fail if above four image-quality is not good.
5. Test the connection between main board and IR board.
6. The main board would be note fail if there are some broken occur in wire or main board.

3. DMD Panel Alignment

Equipment:

- Pattern Generator

Procedure:



1. Connect power, Video signal into projector.
2. Light on projector
3. Change pattern generator to full white pattern.
4. Watch the image if any pixel lost
5. Change pattern to full black.
6. Watch the image if any pixel lost
7. Change pattern from full black to full white.
8. Watch the image if any pixel can not return
9. Change pattern from full black to full white.
10. Watch the image if any pixel can not return
11. If above 8 step has some pixel lost or can not return, it's DMD chip has pixel defect
12. Change to the Slid Line pattern
13. Watch the image if any pixel lost
14. If above step has some pixel lost, it's conductive socket has defect or assembly loosed.

4. PC Alignment Procedure

Equipment:

- Pattern generator (Chroma-2250)

OSD Default value:

Item	Value
Cal R Offset	127
Cal G Offset	127
Cal B Offset	127
Cal R Gain	127
Cal G Gain	127
Cal B Gain	127
YPbPr R Offset	127
YPbPr B Offset	127

Procedure:

Gray Level:

1. Connect power, D-sub, into projector.
2. Change Timing and pattern of pattern generator:
3. Timing: 800*600@60
4. Pattern: As Figure1 {A near white color (240,240,240) and a near black color(16,16,16), the area of white is 101/200, black is 99/200}
5. Light on projector
6. Set user OSD values to default.
7. Enter factory mode.
8. Set Factory values to default.
9. Press "Calibration RGB" to let the black level to just distinguish, and the light output of white level to just max.
10. Check the 32 levels of gray. All steps must appear.

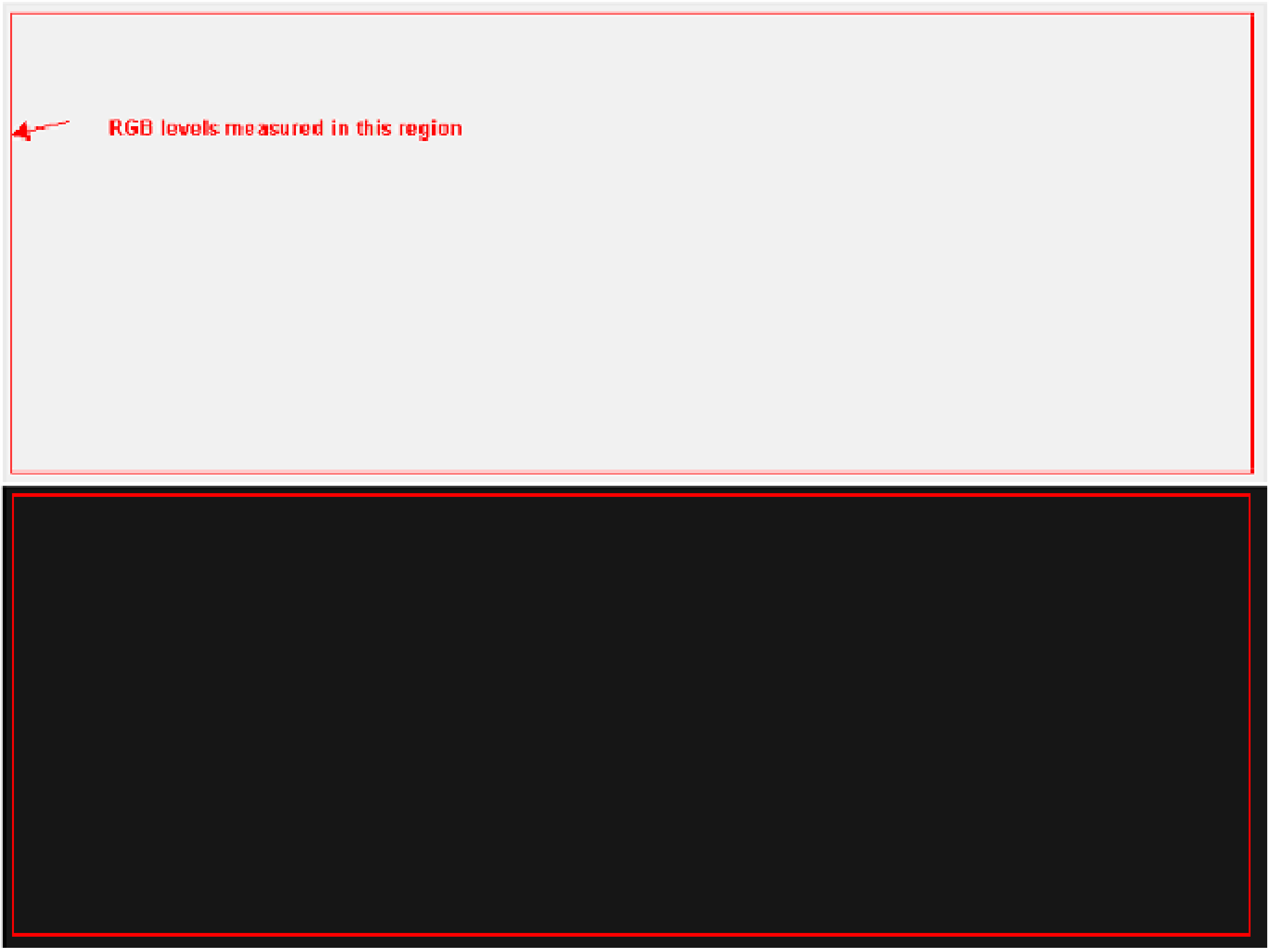


Figure1

5. YUV Alignment Procedure

Equipment:

- Pattern generator (VG-828)

OSD Default value:

Item	Value
Cal R Offset	127
Cal G Offset	127
Cal B Offset	127
Cal R Gain	127
Cal G Gain	127
Cal B Gain	127
YPbPr R Offset	127
YPbPr B Offset	127

Procedure:

1. Connect power core, YPbPr cable into projector.
2. Change timing and pattern of pattern generator:
   Timing: 480i
   Pattern: As Figure2
3. Light on projector
4. Adjust user OSD values to default.
5. Enter factory mode.
6. Adjust Factory values to default.
7. Press “Calibration YPbPr” to calibrate the mid level offset.



Figure2

2. Optical Engine Assembly and Alignment Concerns

1. Assembly Lamp module:

1.1 Washer, Screw, Fin and Mesh Assembly

I. Assemble Washer and Screw to the HLD Lamp(Fig. 1-1)

II. Assemble "MESH" with Lamp holder .Mesh hooks HLD Lamp first (Fig. 1-2) and press it assemble to the right position (Fig. 1-3).

III. Assemble "FIN" with Lamp holder and fasten screw (Fig. 1-4).

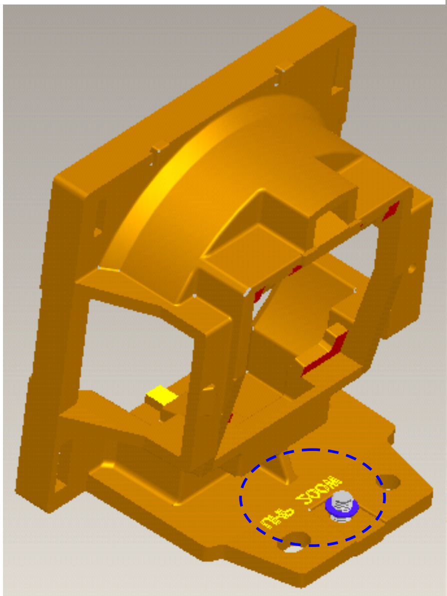


Fig. 1-1

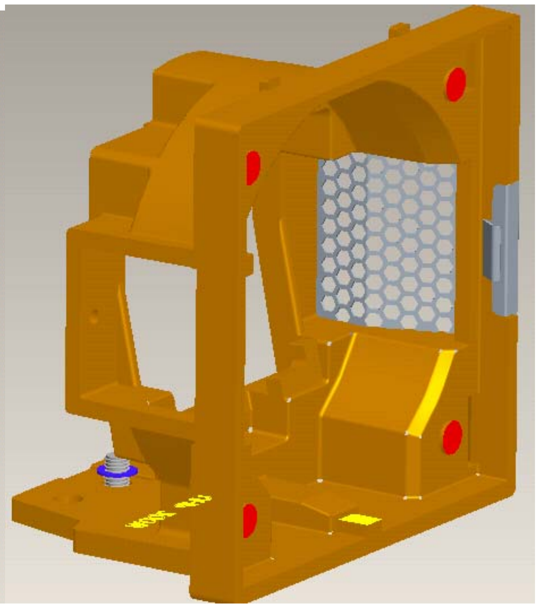


Fig. 1-2

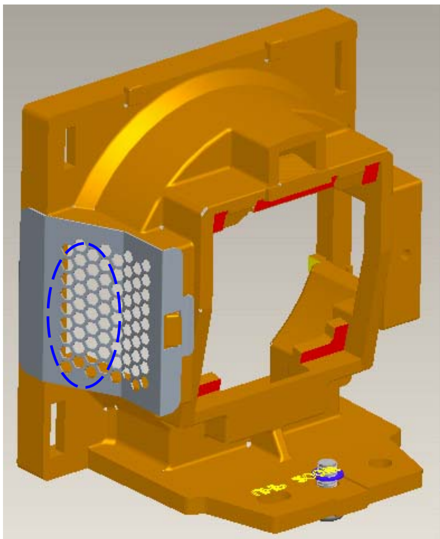


Fig. 1-3

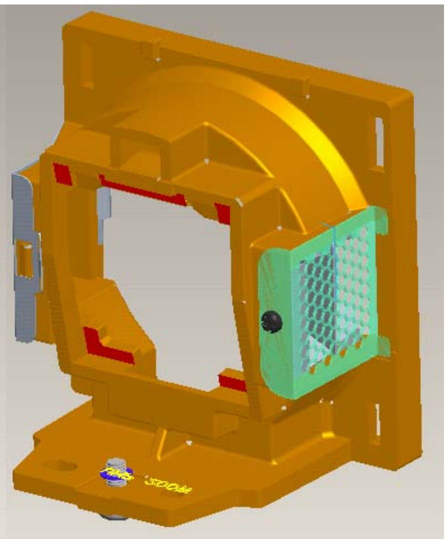


Fig. 1-4

1.2 Front Glass Assembly.

i. Front Glass UV coated surface (marked) must face to Lamp. (Fig. 1-6)

ii. F/G must be placed on datum surfaces well. (Fig. 1-7)

iii. To make sure F/G Clip hooked well with HLD lamp. (Fig. 1-8)

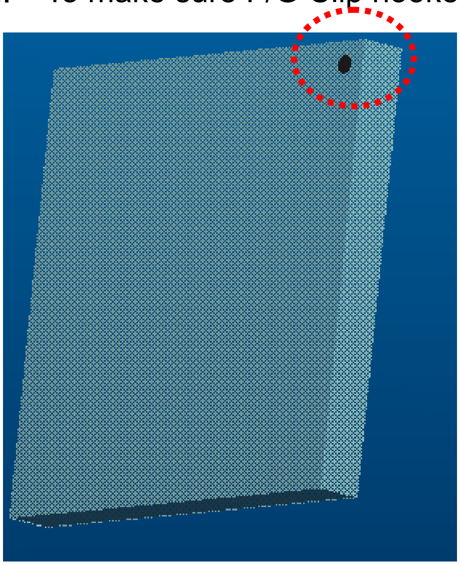


Fig. 1-6

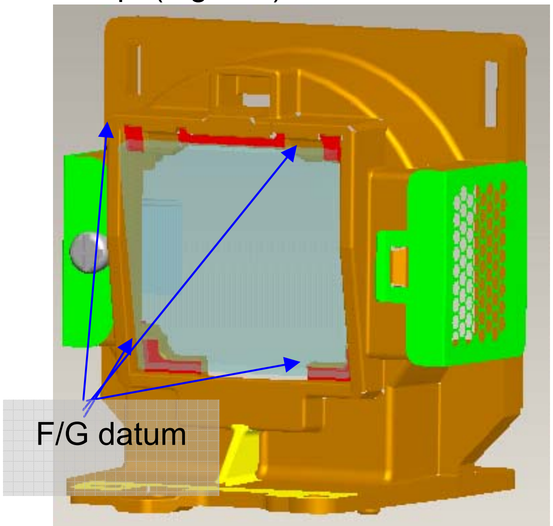


Fig. 1-7

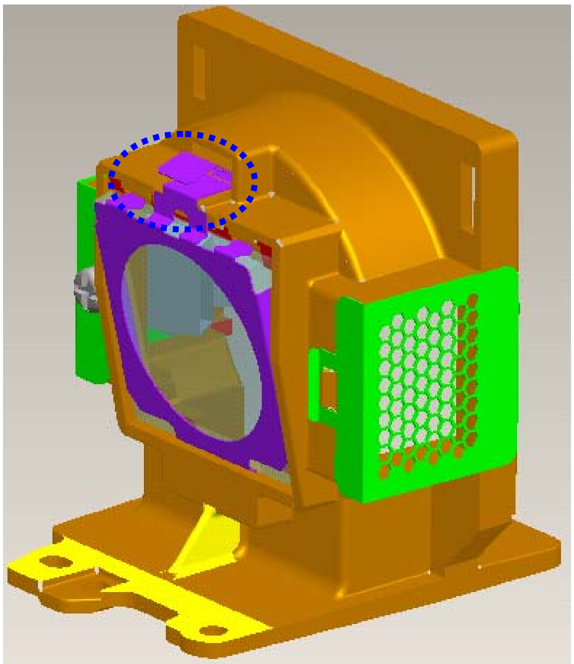


Fig. 1-8

1.3 Lamp wire and Lamp Assembly.



Fig. 1-9

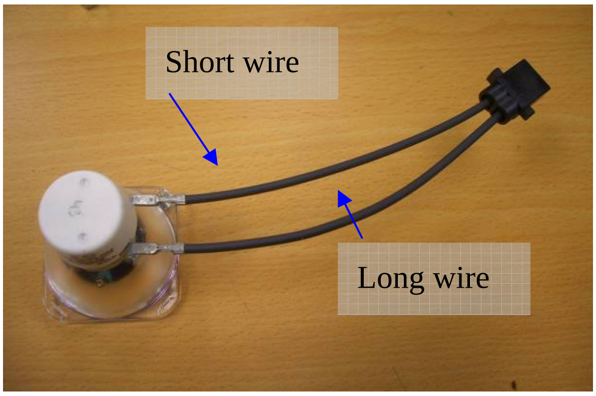


Fig. 1-10

i. Insert Lamp into HLD Lamp and push Lamp forward to touch DTM Lamp of HLD Lamp (Fig. 1-11)

ii. To make sure that three datum contact with the lamp well(Fig. 1-12)

iii. After assemble Lamp to HLD Lamp, Hook “Clip down Lamp” first then Hook “Clip UP Lamp” on the HLD Lamp to fix Lamp last. (Fig. 1-13、1-14)

iv. Check assembly again and make sure the three datum contact with the lamp.

v. Assemble Plate Lamp to the HLD Lamp and fasten the screw(Fig. 1-15)

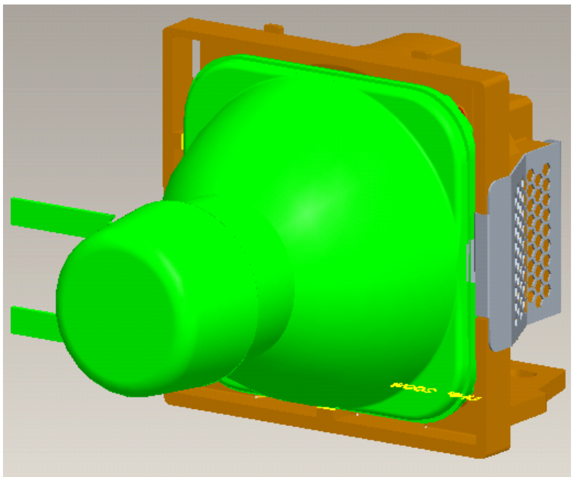


Fig. 1-11

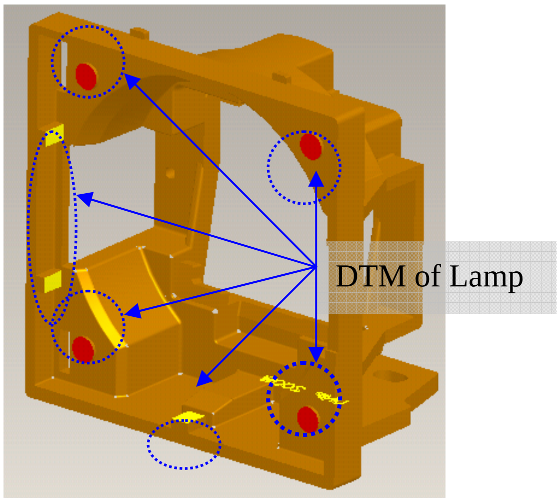


Fig. 1-12

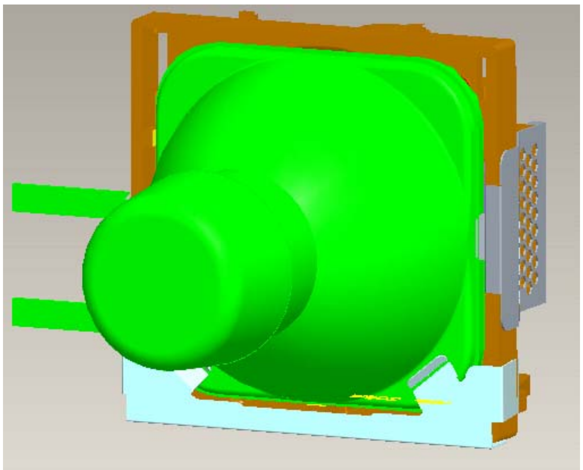


Fig. 1-13

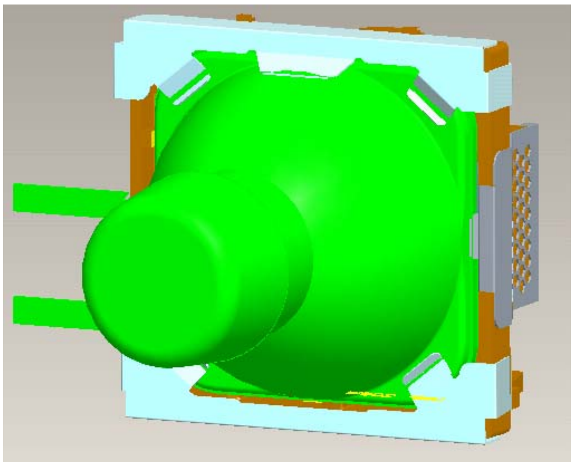


Fig. 1-14

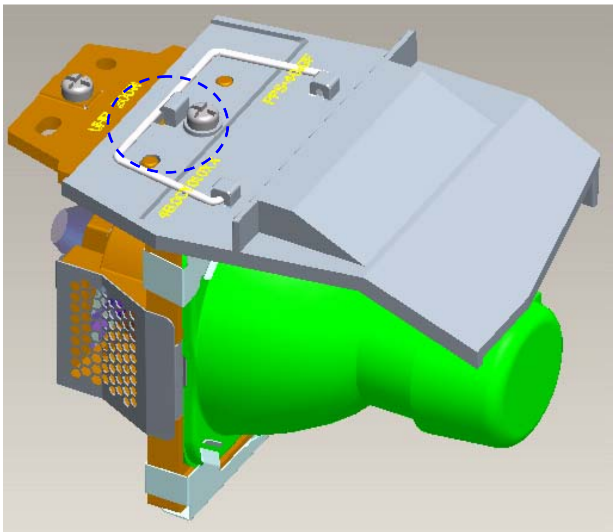


Fig. 1-15

2. BKT LINK Lamp and CW Shield Assembly

2.1. Insert CW Shield and hook BKT LINK Lamp

2.2. Fasten screw (Fig. 2-1.2-2)

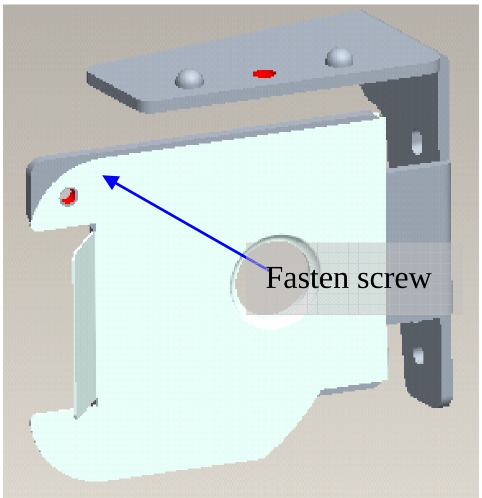


Fig. 2-1

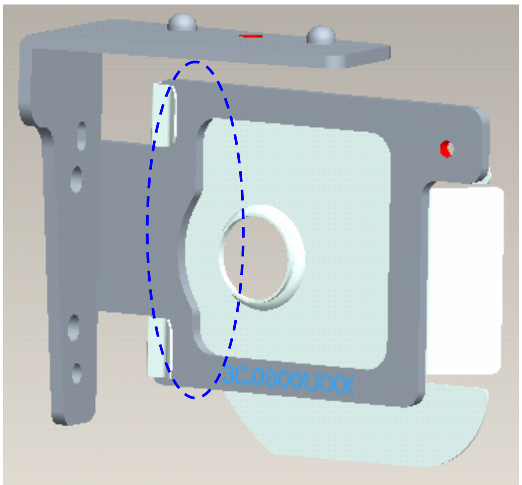


Fig. 2-2

3. Assembly CW Module

3.1 CW Module Assembly Sequence as blow (Fig. 3-1):

(1) BKT CW (2) Damper CW (3) CW (4) Fixed screw (5) CVR CW

(6) M2 Screw (7) Sensor Board (8) M2 Screw

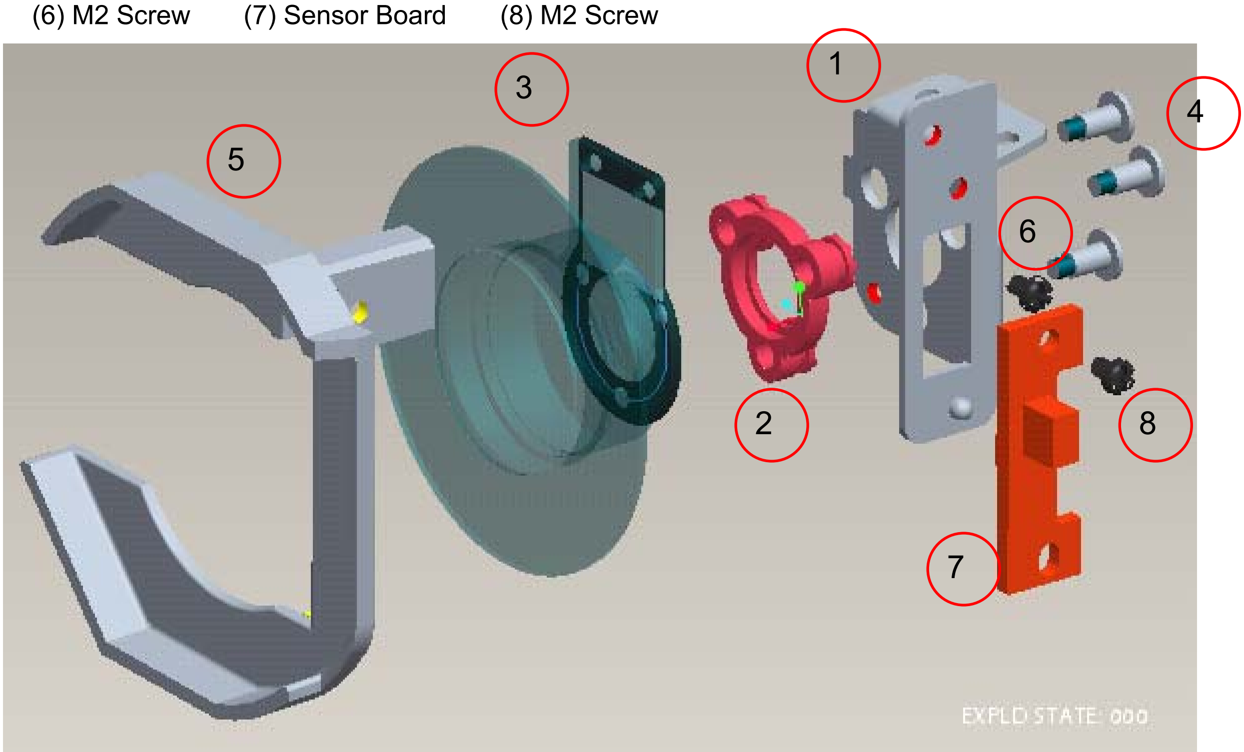


Fig. 3-1

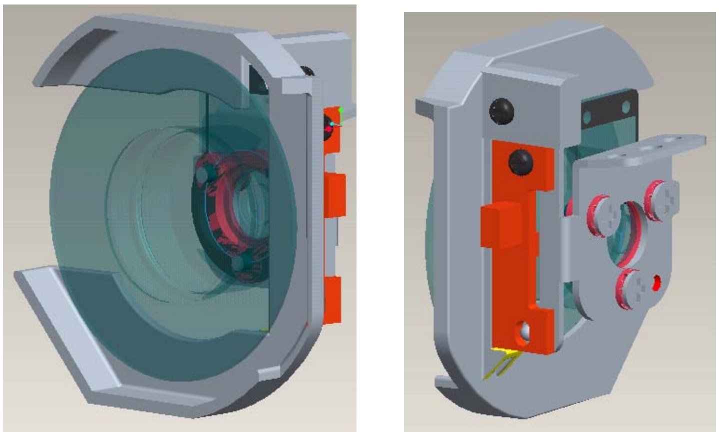


Fig. 3-2

4. Assembly Baffle Stop AL

4.1. Assemble Baffle Stop AL on HSG DMD and fasten screw (Fig. 4-1)

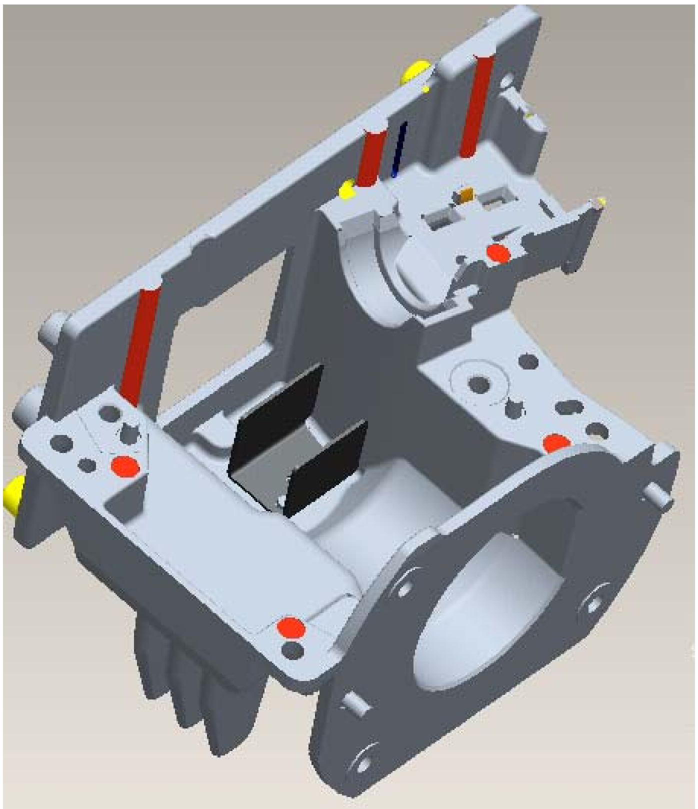


Fig. 4-1

5. Assembly LP Module

5.1 LP must datum well with "BKT_LP" show as Figure 5-1

5.2 Referring to Figure 5-2,there must be visible clearance between "BKT_LP" and "LP opening" after assembly。

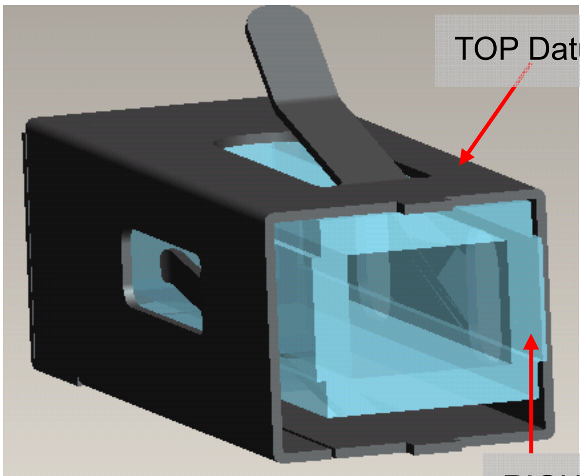


Fig. 5-1

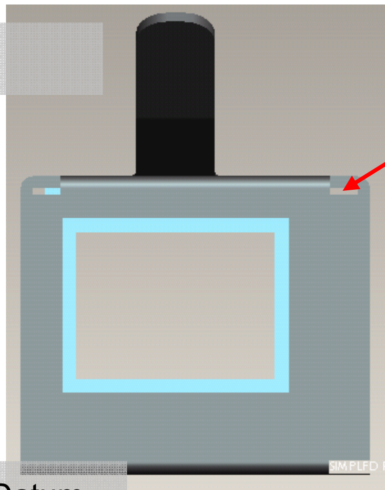


Fig.5-2

5.3 Glue "LP" and "BKT_LP" with ""UV5503 Glue" at two opening of "BKT_LP" show in Figure 5-3.

5.4 UV-5503 Glue curing process and concerns:

vi. The UV-glue must fill up the whole opening area (shown in Figure 5-3) to contact well

with LP surfaces and BKT_LP.

vii. Exposed to visible light at 350 ~ 420nm (at least 100mW/cm2) wavelength for 1 minute.

viii. After curing, the height of UV-glue should not exceed BKT_LP for more than 0.6mm

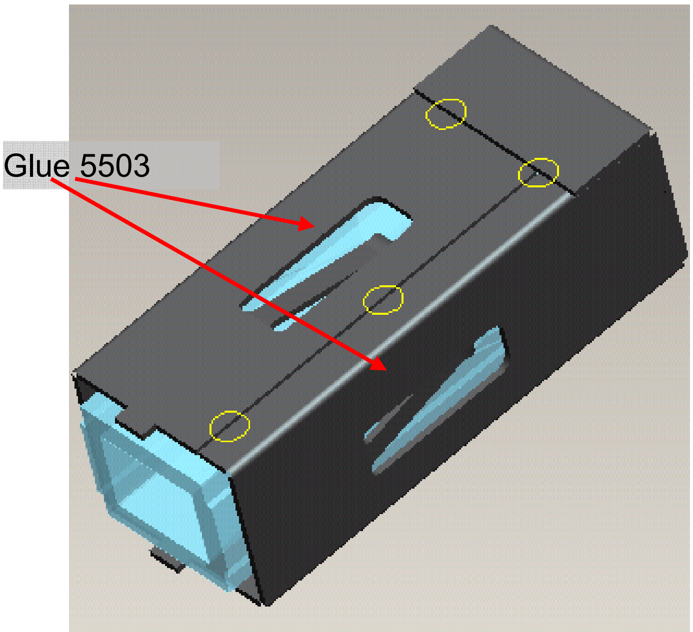


Fig. 5-3

5.5 Assembly LP Module to HSG DMD

i. Assembly two Overfill adjustment screw (8F.1A752.8R0) to HSG DMD (Fig. 5-4).
** Adjustment criteria refer to item 5.6.

ii. Insert CLIP of BKT_LP into the hole

iii. Placed LP Module on LP datum and adjustment screw well, shown (Fig. 5-6).

iv. Assembly “Baffle LP” first (Figure 5-7)and make sure it hooks HSG DMD well
~ Assembly Criteria was shown in Figure 5-7-2.

v. Assembly “Clip_LP” second (Fig. 4-8) and make sure it hooks HSG DMD well. (Figure 5-9).

vi. Push two hook places to make sure that Baffle_LP touches “BKT_LP “well, don’t push the middle place of “Baffle_LP”.

5.6 Overfill Adjustment @ LP Module

Overfill Adjustment Criteria:

i. Pre-assembly 2 adjusting screws. Criteria shown as Figure 5-10.

ii. Alignment Sequence:

a. To adjust “Horizontal Adjustment Screw” firstly, then “Vertical Adjustment Screw”.

b. Refer to Figure 4-10.

For Overfill Re-adjustment:

1. Those 2 Adjustment Screws must be released closely to the “Pre-assembly” positions first. (defined in 4.6-i)

2. Follow adjustment steps shown in Item 4.6-ii.

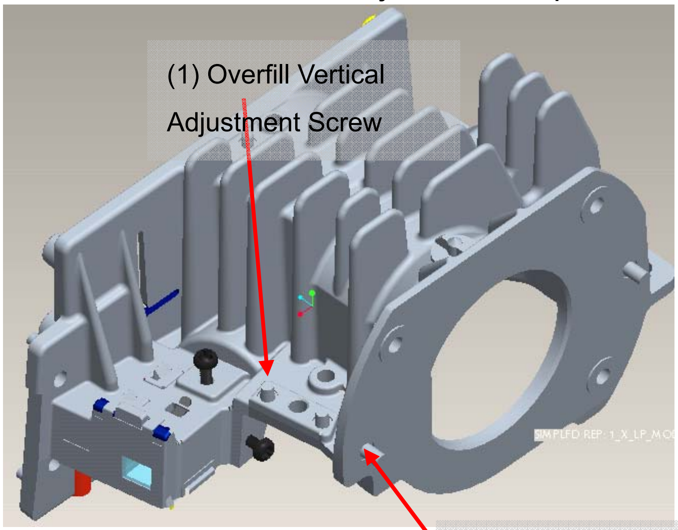


Fig.5-4

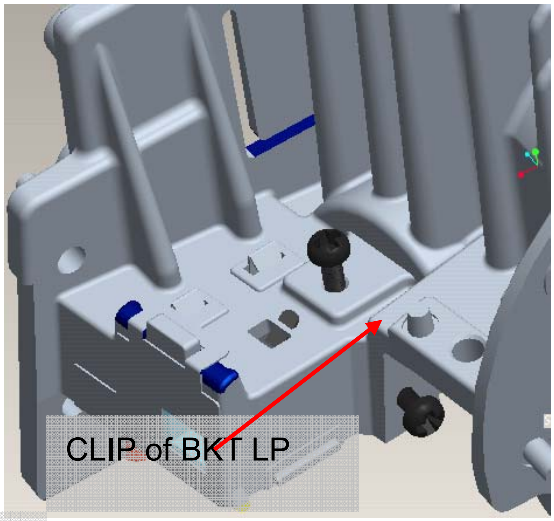


Fig. 5-5

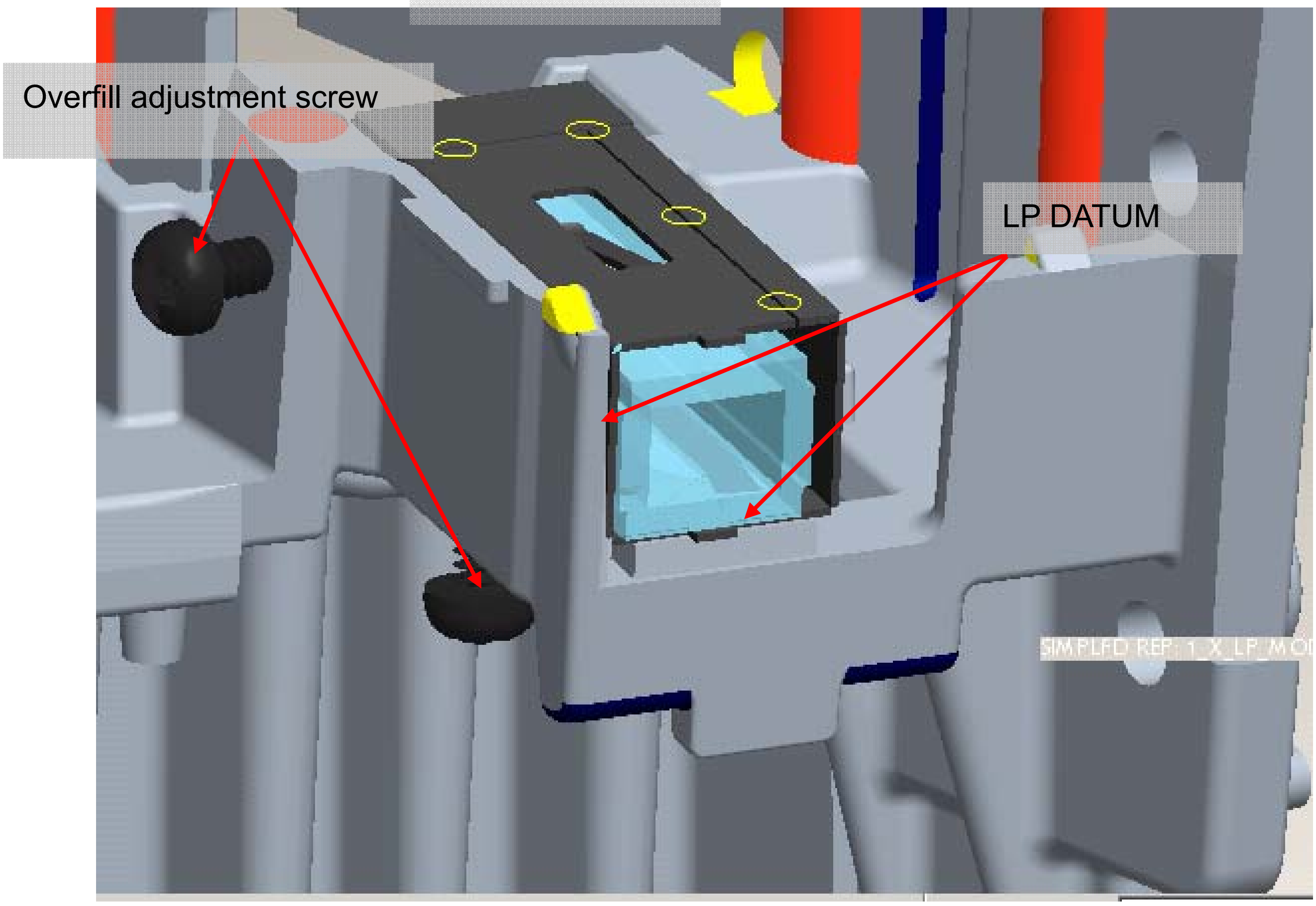


Fig. 5-6

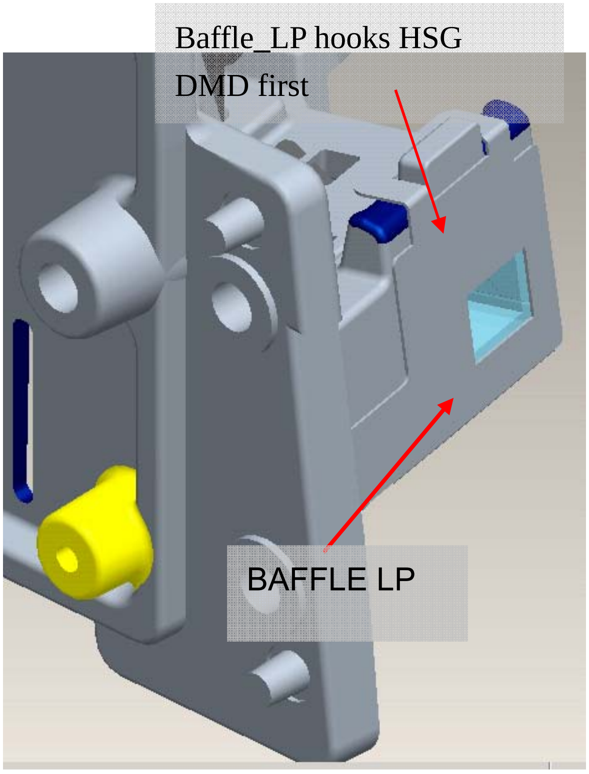


Fig. 5-7 (1)

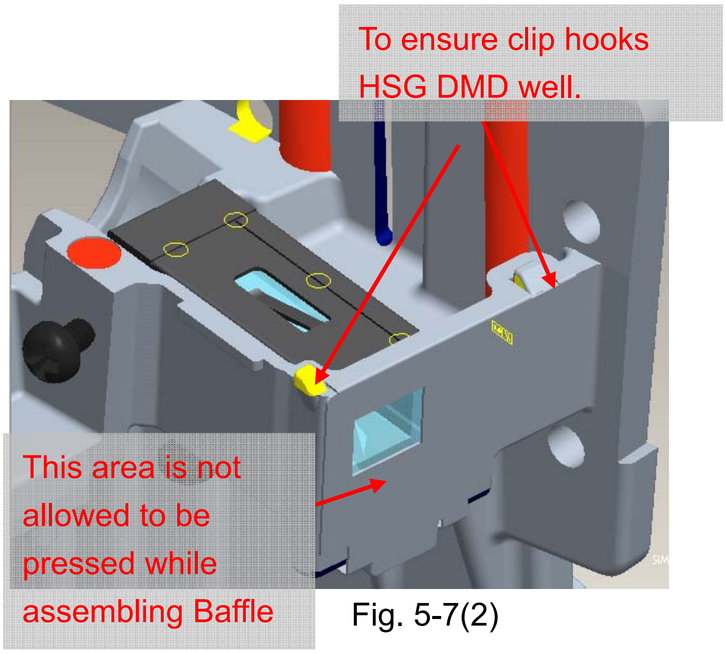


Fig. 5-7(2)

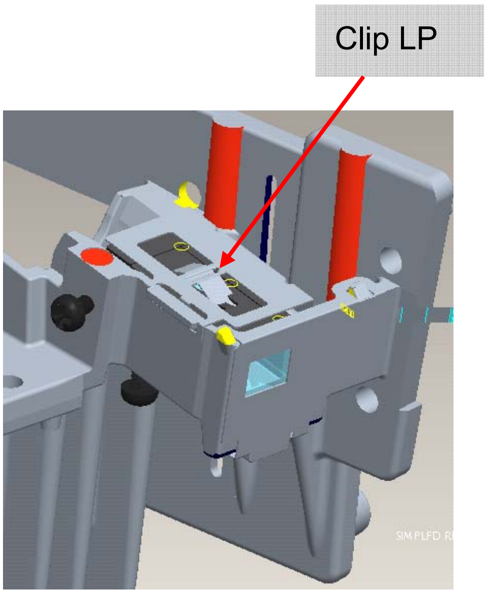


Fig. 5-8

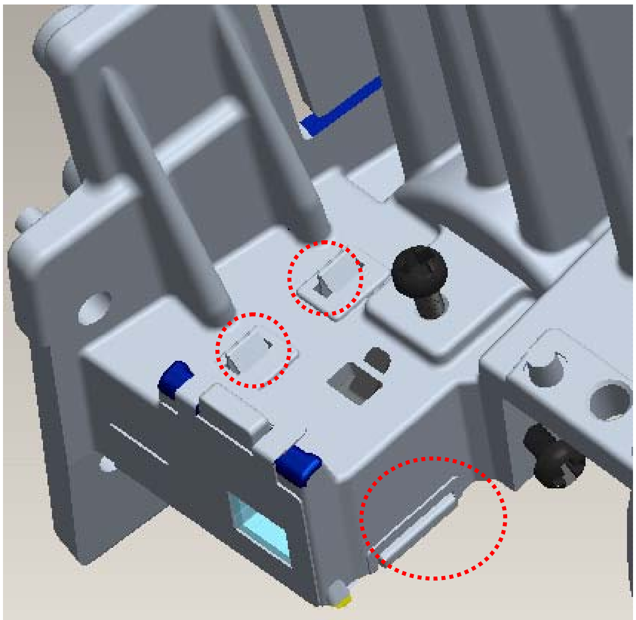


Fig. 5-9

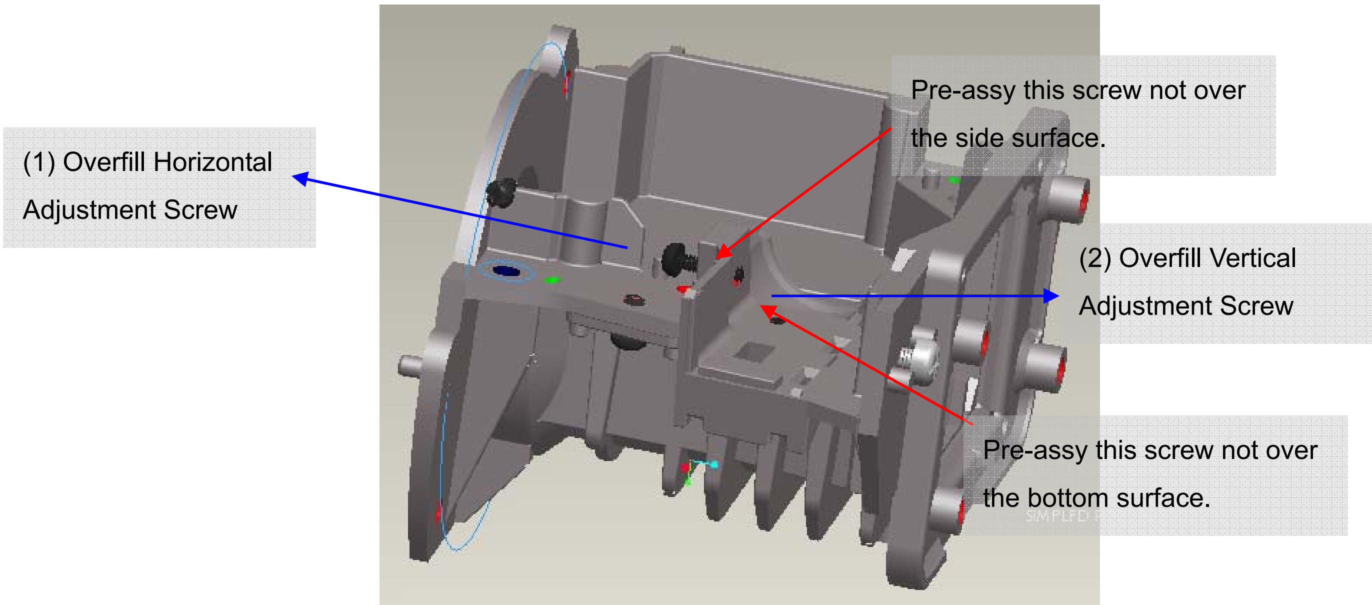


Fig. 5-10

6. Assembly HSG ILL Module

6.1 FM1 Assembly

I. FM1 must be placed on datum surfaces well and breach of FM1 must be face to inside (Fig. 6-1)

II. Insert the" CLIP of FM1" into the hole on the HSG ILL and make sure " CLIP of FM" hook on the HSG ILL well (Fig. 6-2)

6.2 CM Assembly

III. Insert Clip CM Side and Clip CM Bottom first (Fig. 6-3,6-5)

IV. Assemble CM to HSG ILL and to make CM contact three datum on the HSG ILL Well (Fig. 6-8)

V. Assemble "CLIP of TOP" to the HSG ILL (Fig. 6-9)

VI. To check and make sure " CLIP of CM" hooks the HSG ILL very Well (Fig. 6-4, 6-6,6-10)

VII. Assemble Baffle Stop to HSG ILL and fasten screw (Fig. 6-10)

VIII. Paste Sponge tube AL on cannelure of HSG ILL(Fig. 6-11)

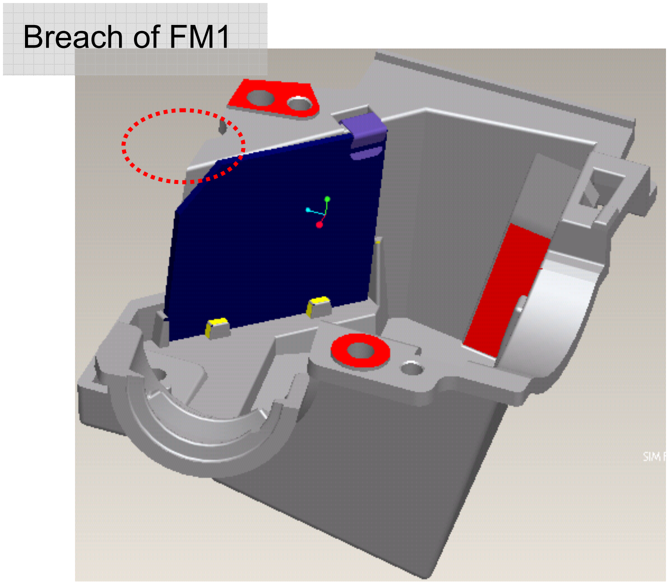


Fig. 6-1

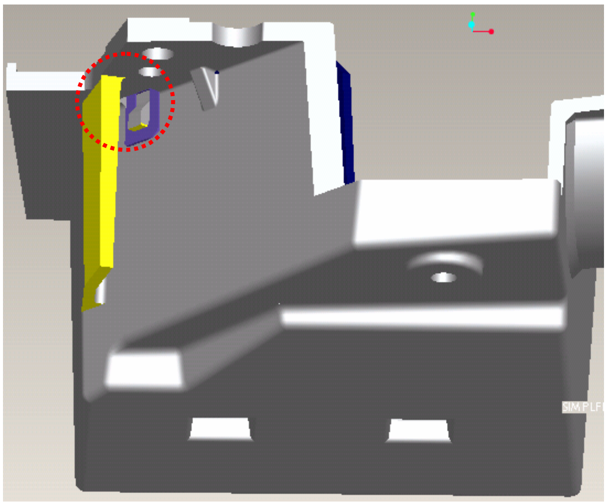


Fig. 6-2

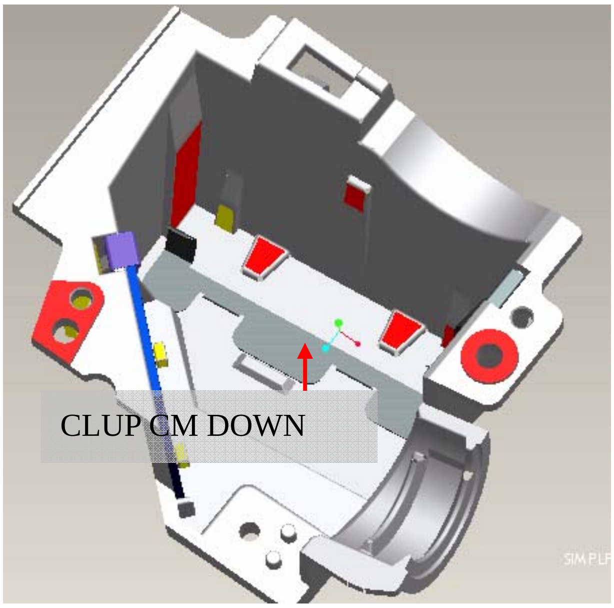


Fig. 6-3

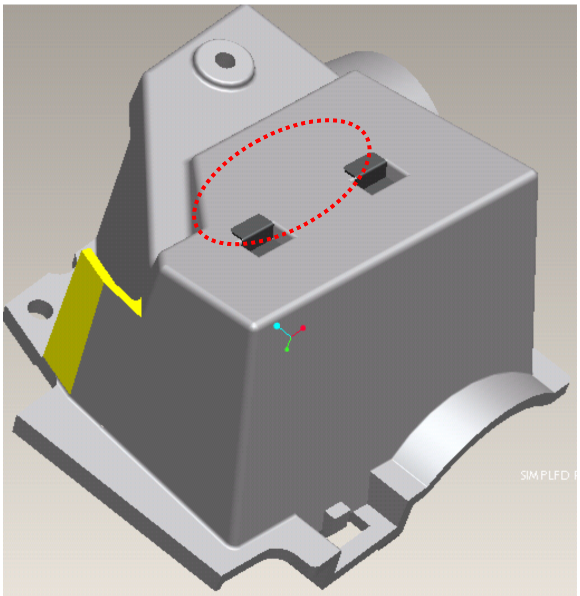


Fig. 6-4

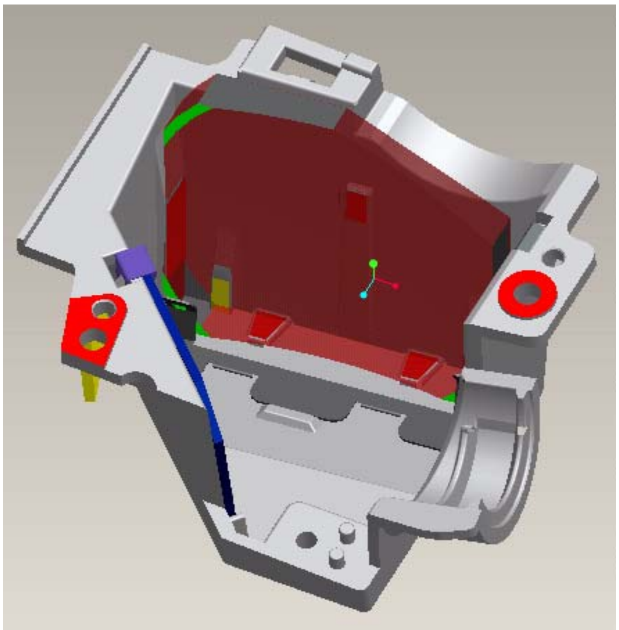


Fig. 6-5

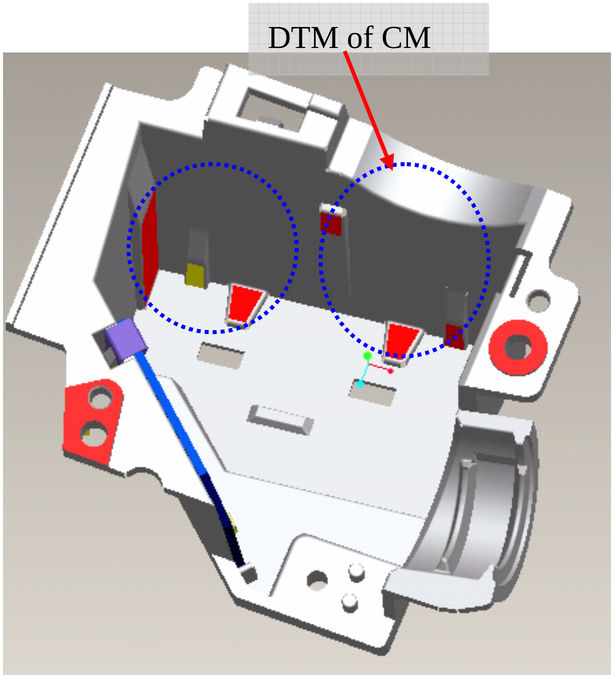


Fig. 6-6

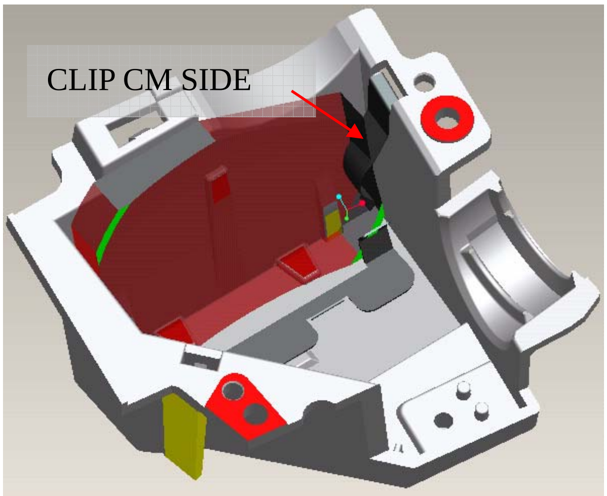


Fig. 6-7

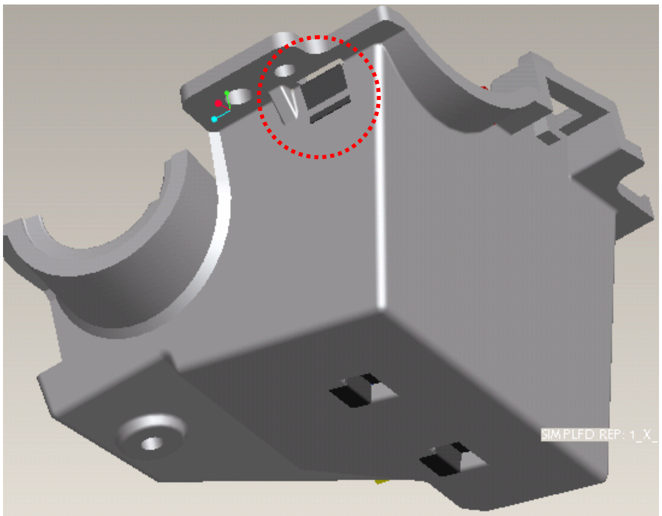


Fig. 6-8

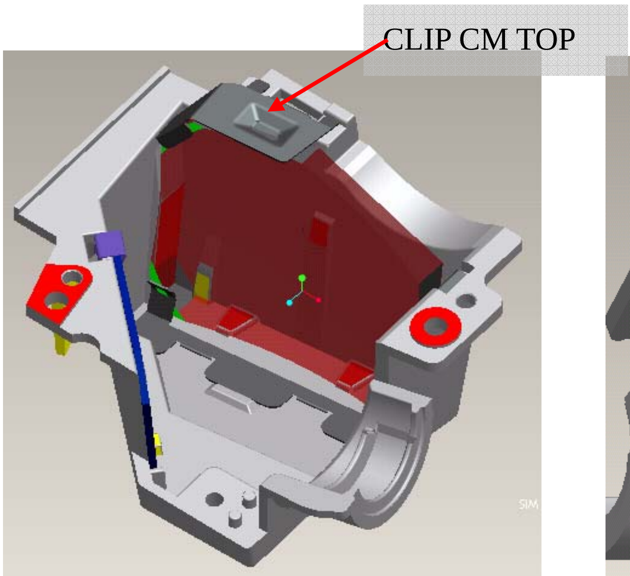


Fig. 6-9

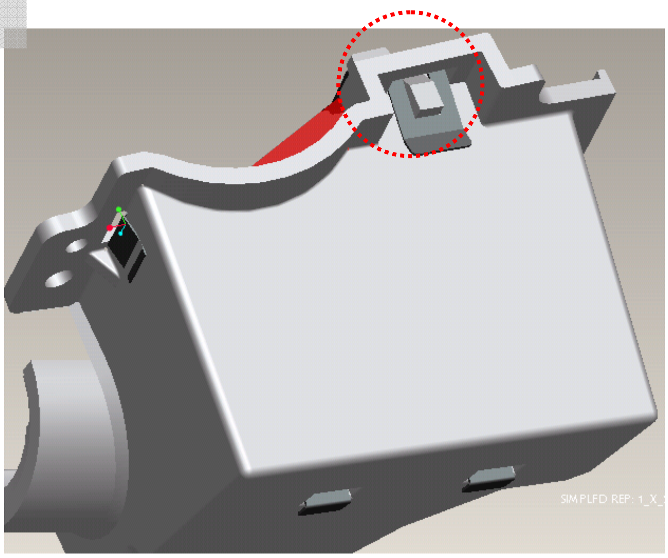


Fig. 6-10

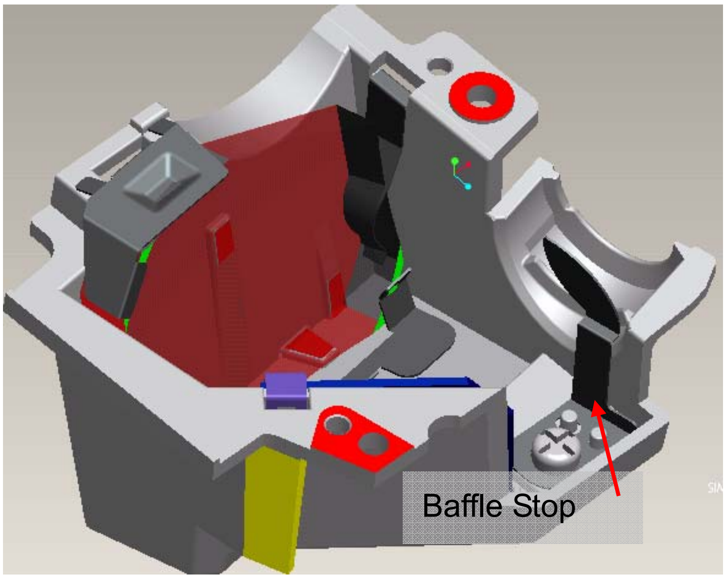


Fig. 6-10

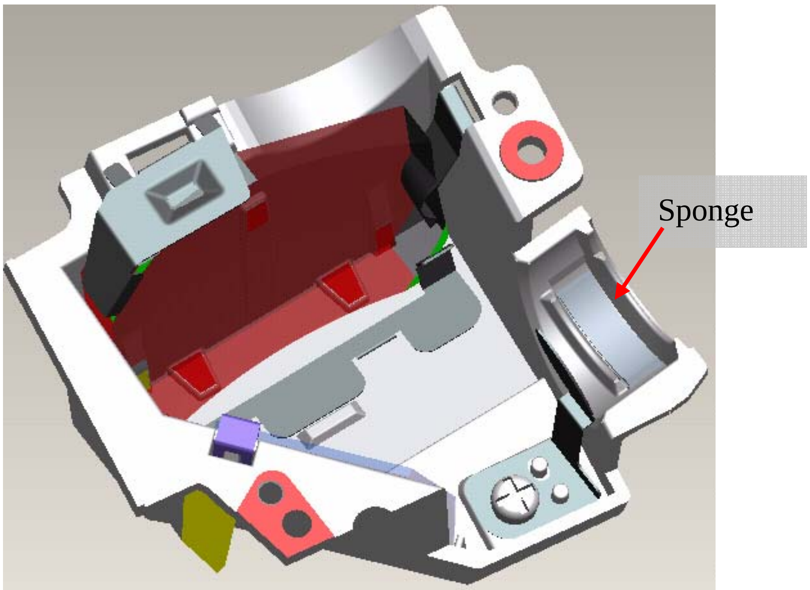


Fig. 6-11

7. AL, HSG ILL and HSG DMD Assembly:

7.1 Placed “AL” on the HSG DMD .The “raised surface” of “AL” shall toward “DMD direction” (Fig. 7-1)

7.2 Assemble” HSG ILL Module” to HSG DMD and cover over on “AL” (Fig. 7-2)

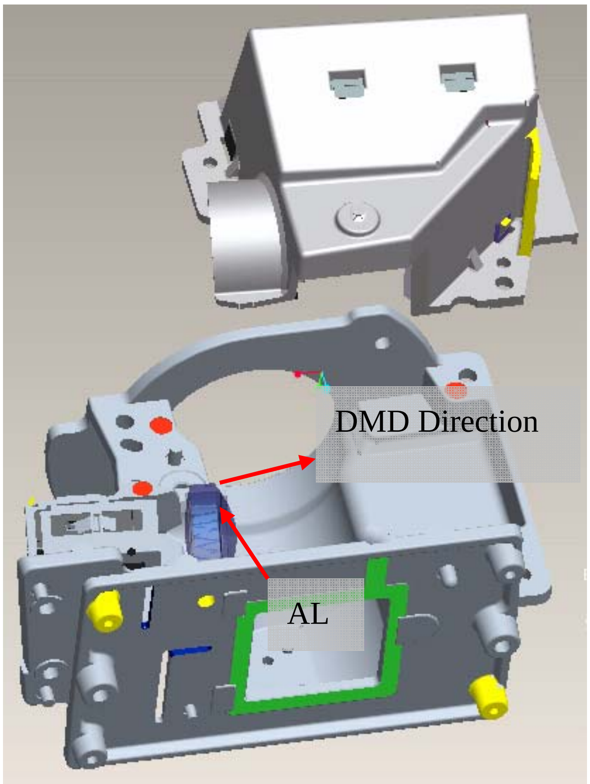


Fig. 7-1

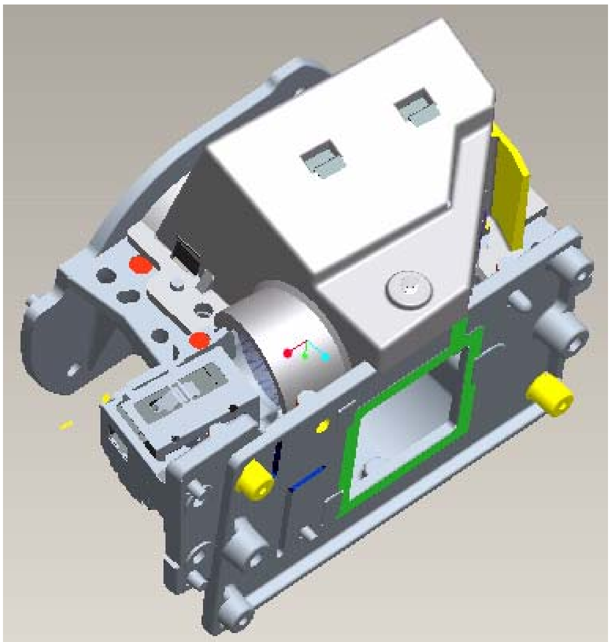


Fig. 7-2

8. DMD and Chip B/D Module

8.1. Judge Chip B/D and DMD alignment keying first (Fig. 8-1, 8-2)

8.2. Alight keying and Assemble DMD to Chip B/D (Fig. 8-3)

8.3. Push DMD slightly and use screwdriver rotate button to lock DMD on Chip B/D (Fig. 8-4)

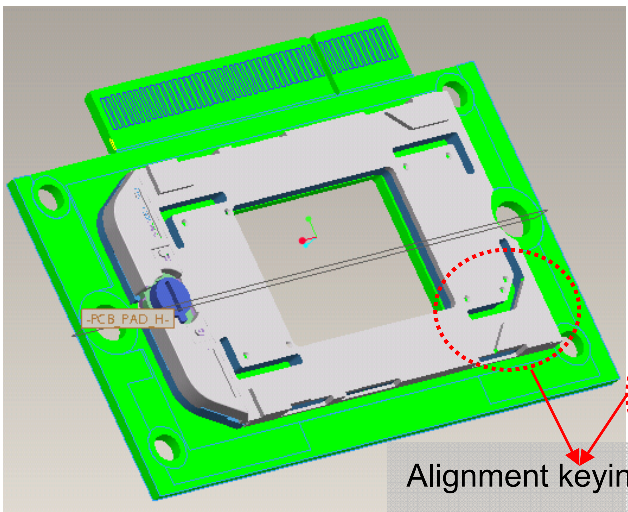


Fig. 8-1

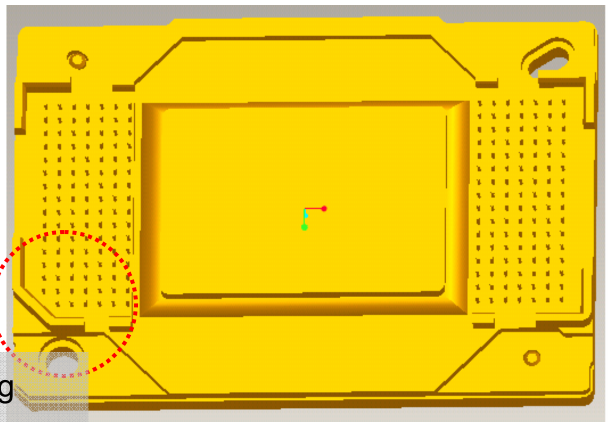


Fig. 8-2

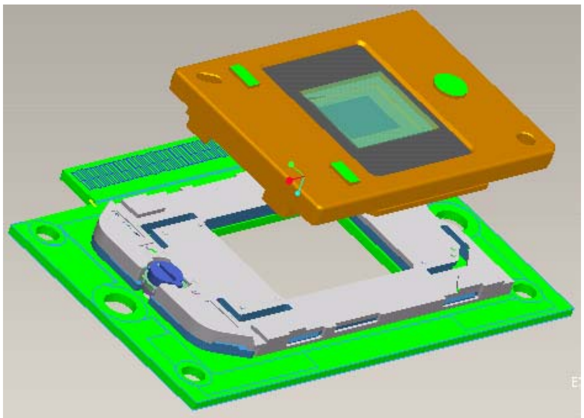


Fig. 8-3

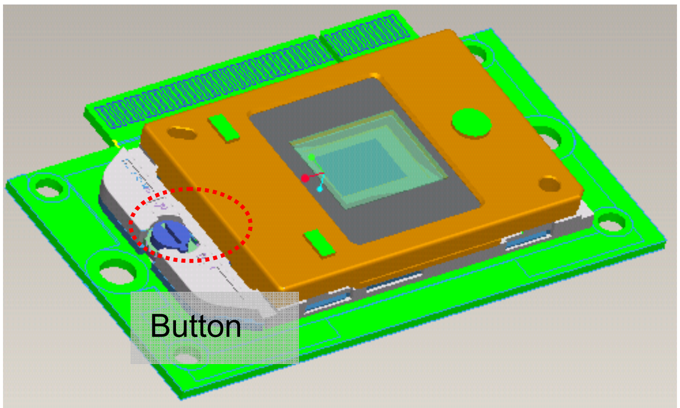


Fig. 8-4

9. AL , HSG ILL and HSG DMD Assembly:

9.1 Placed "AL" on the HSG DMD .The "raised surface" of "AL" shall toward "DMD direction" (Fig. 9-1)

9.2 Assemble" HSG ILL Module" to HSG DMD and cover over on "AL" (Fig. 9-2)

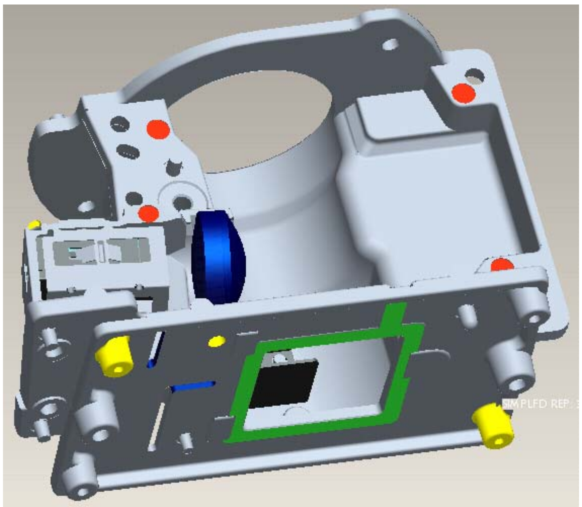


Fig. 9-1

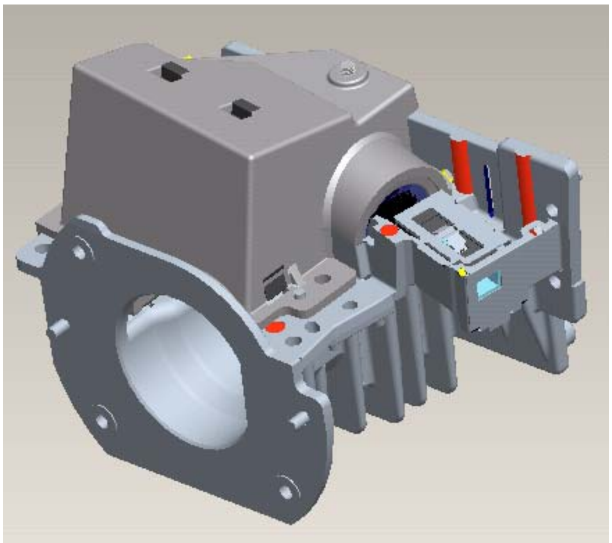


Fig. 9-2

10. Assembly OP ENG

10.1 Assemble Baffle DMD to HSG DMD (Fig. 10-1)

10.2 Assemble Chip B/D Module to HSG DMD and fasten the screw(Fig. 10-2)

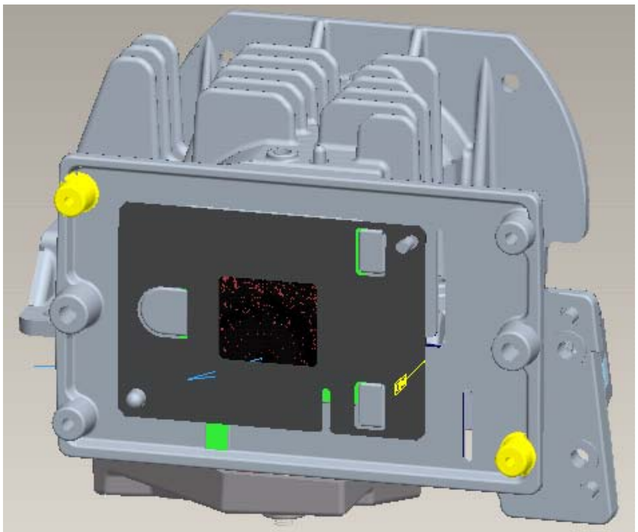


Fig. 10-1

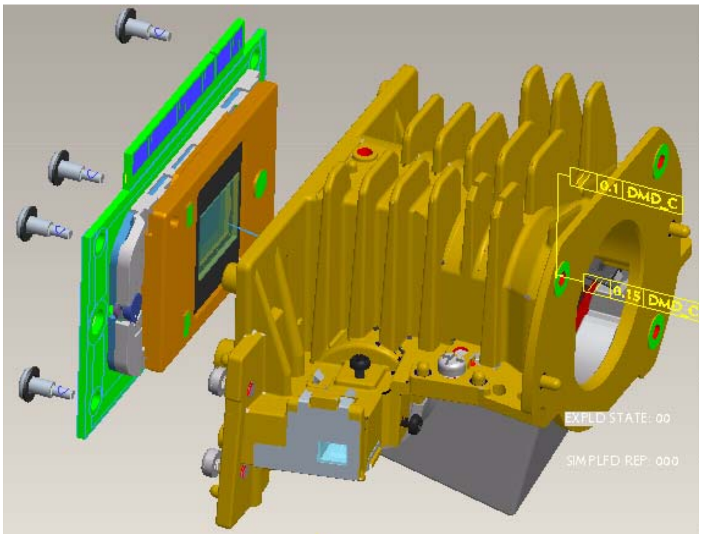


Fig. 10-2

10.3 Fasten shoulder screw Sequence as blow (Fig. 10-3)

i. Pre-fastening Sequence: [1] - [2] - [3] - [4]

ii. Fastening Sequence [2] - [1] - [4] - [3]

iii. Screw Torque must be confirmed to be 2.5 kg-cm.

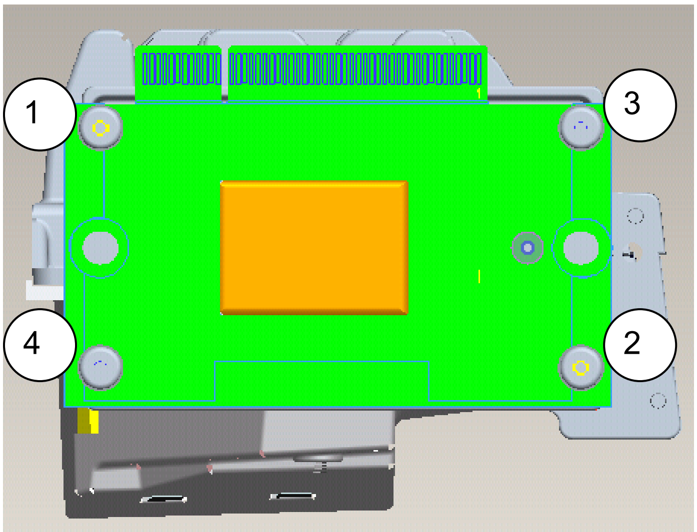


Fig. 10-3

10.4 Assemble PL Lens and fasten screw (Fig. 10-4)

10.5 Assemble Ring Zoom and fasten screw then assembly Ring Focus(Fig. 10-5)

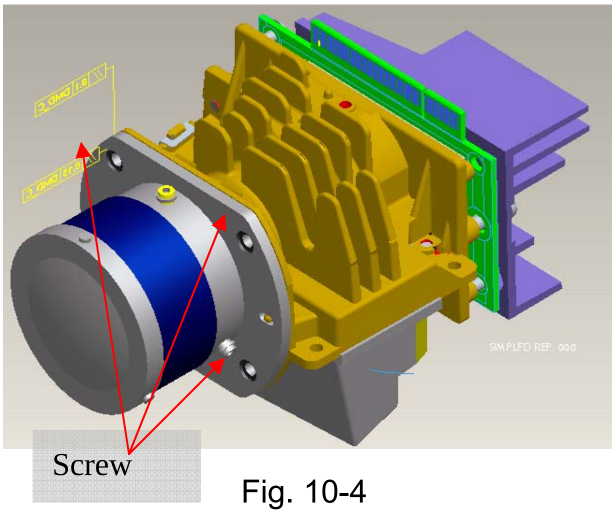


Fig. 10-4

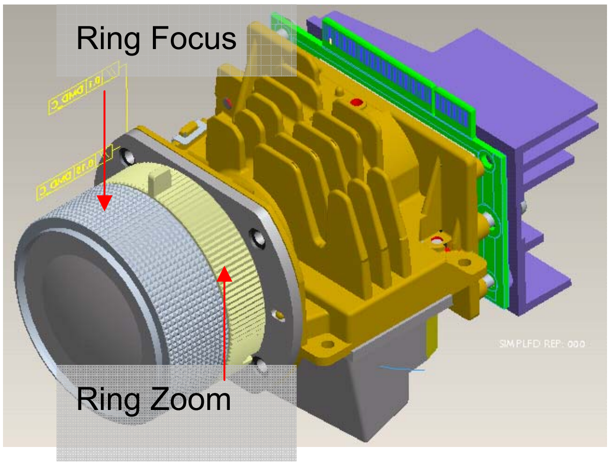


Fig. 10-5

10.6 Assemble CW Module and fasten screw (Fig. 10-6)

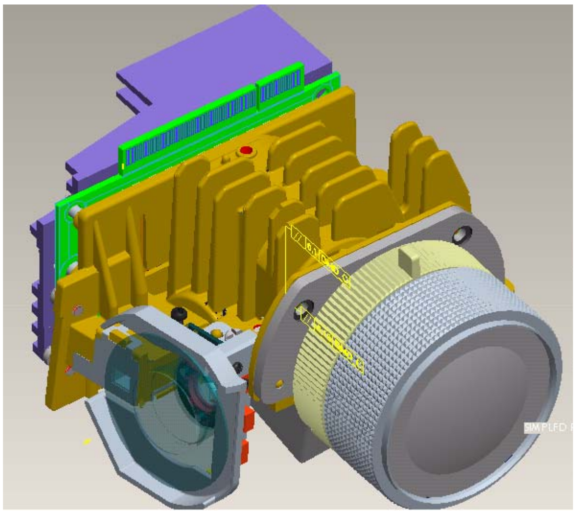


Fig. 10-6

10.7 Assemble BKT Link and Shield CW (Fig. 10-7)

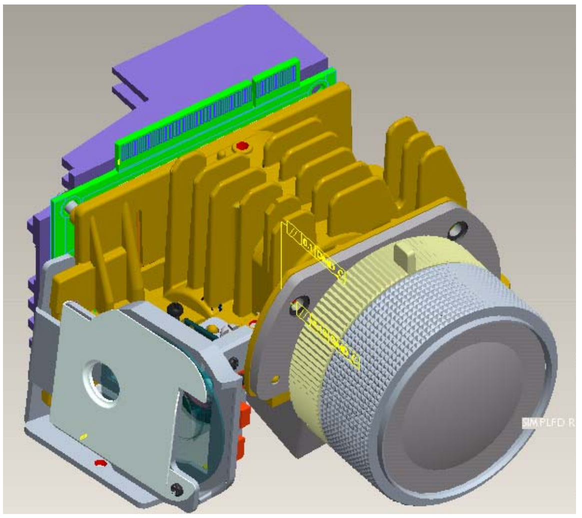


Fig. 10-7

10.8-1 Assemble Thermal pad and Hest-sink

10.8-2 Fasten “Assy spring screw” Sequence as blow (Fig.10-8)

Pre-fastening Sequence: [1] - [2]

Fastening Sequence [2] - [1]

Screw Torque must be confirmed to be 6 kg-cm.

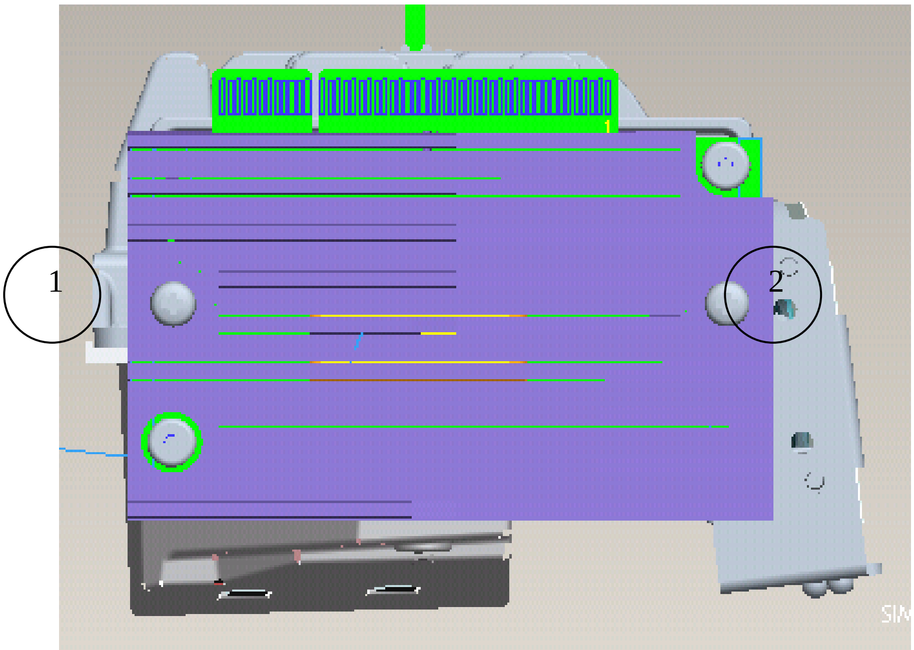


Fig. 10-8

10.9 Assemble Lamp Module and fasten screw (Fig. 10-9)

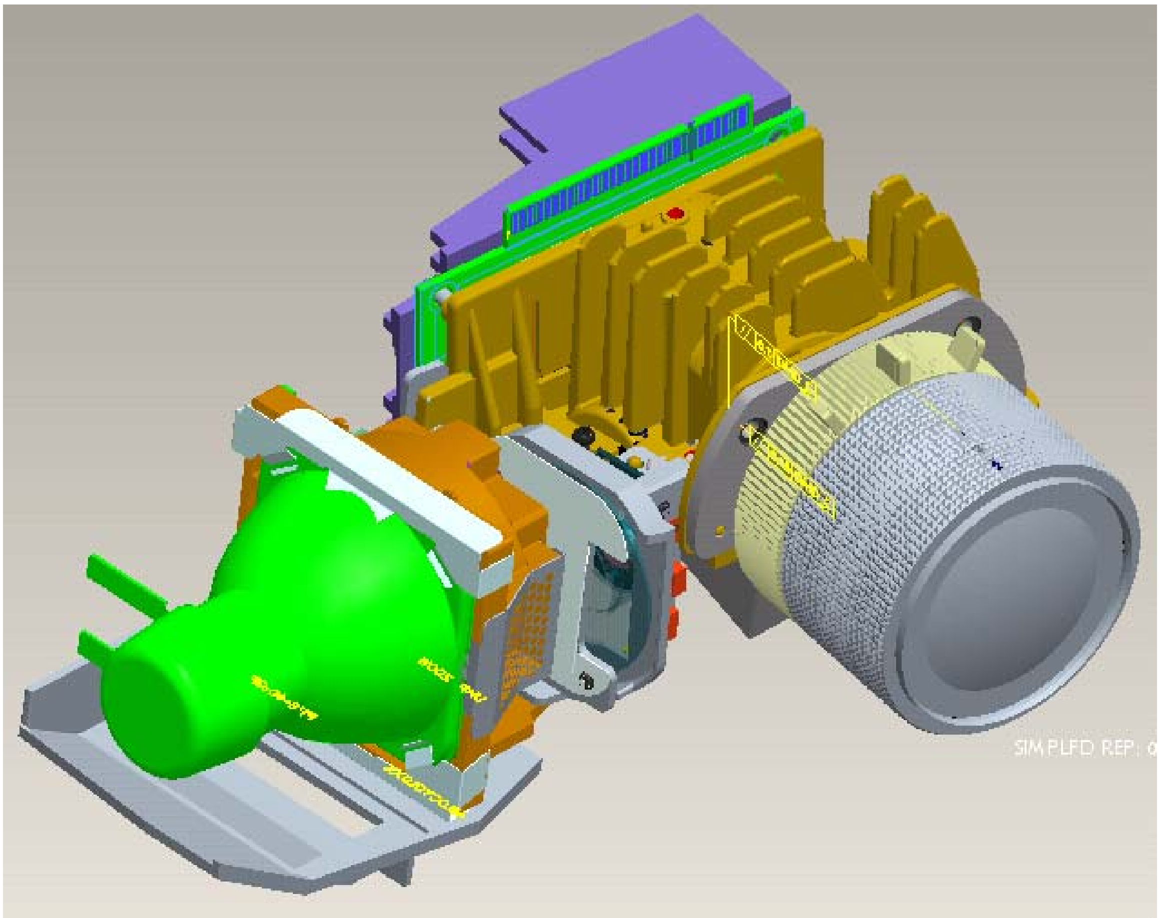
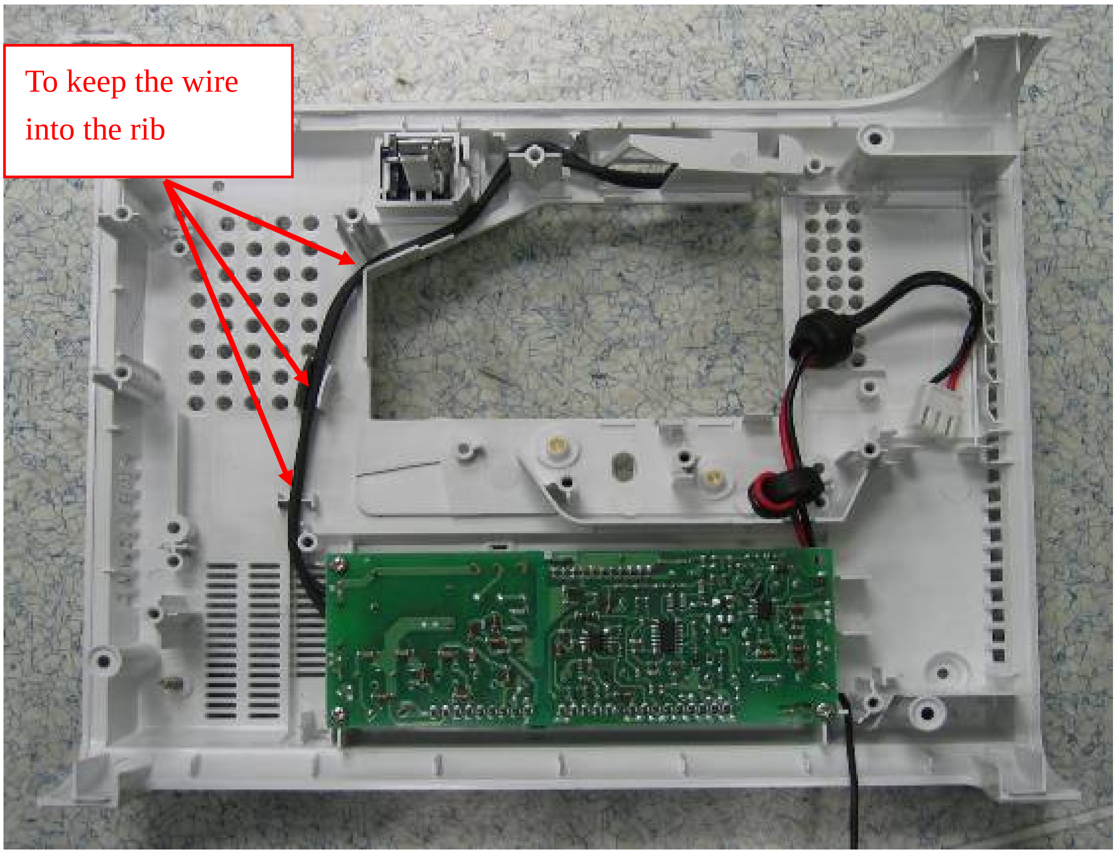


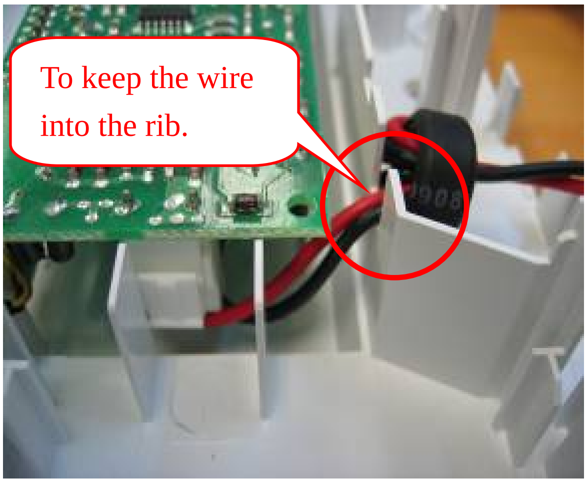
Fig. 10-9

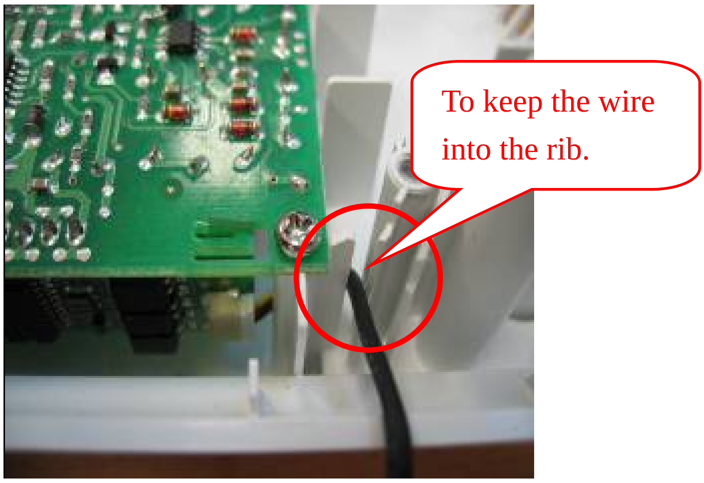
3. Mechanical Assembly Concern

3.1. Ballast assembly and lamp wire alignment
3.2. Blower module assembly and blower wire alignment
3.3. OPT engine assembly and blower wire alignment
3.4. Power board assembly and power board wire alignment
3.5. Lamp box assembly
3.6. Power board shielding assembly and power board grounding wire alignment
3.7. Main board assembly and ballast wire alignment
3.8. Main board shielding assembly and wire alignment
  a. Main board shielding assembly
  b. C/W FPC, C/W sensor wire and blower wire alignment
  c. Front IR wire alignment
3.9. Rear cover assembly and speaker wire alignment
3.10. Twin fans assembly and wire alignment.
3.11. IR board assembly
3.12. Upper case, inlet cover and outlet cover assembly

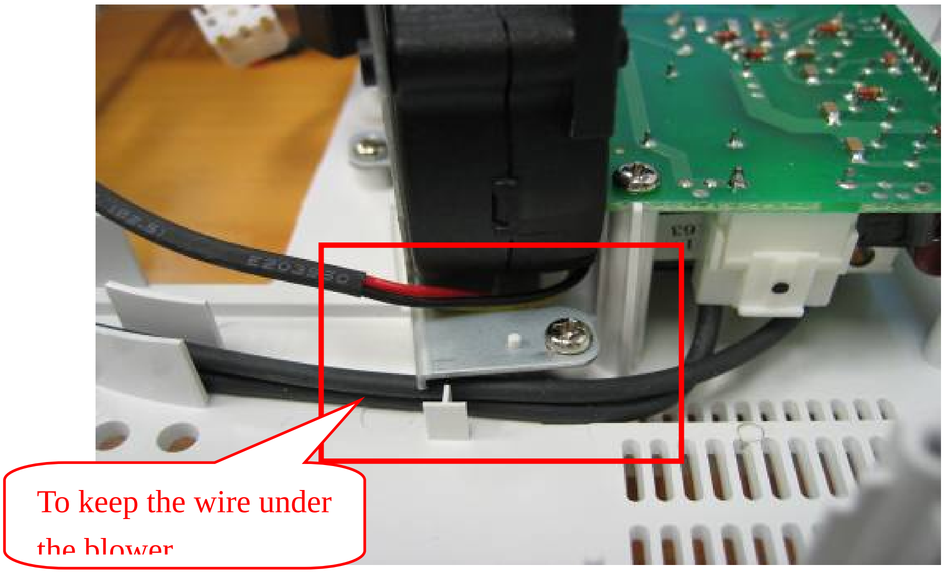
3.1. Ballast assembly and lamp wire alignment

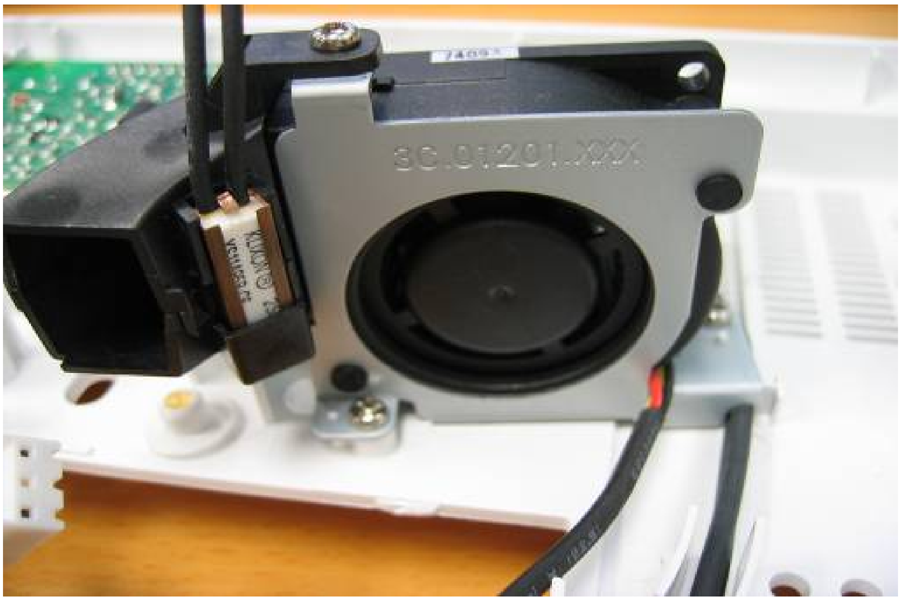




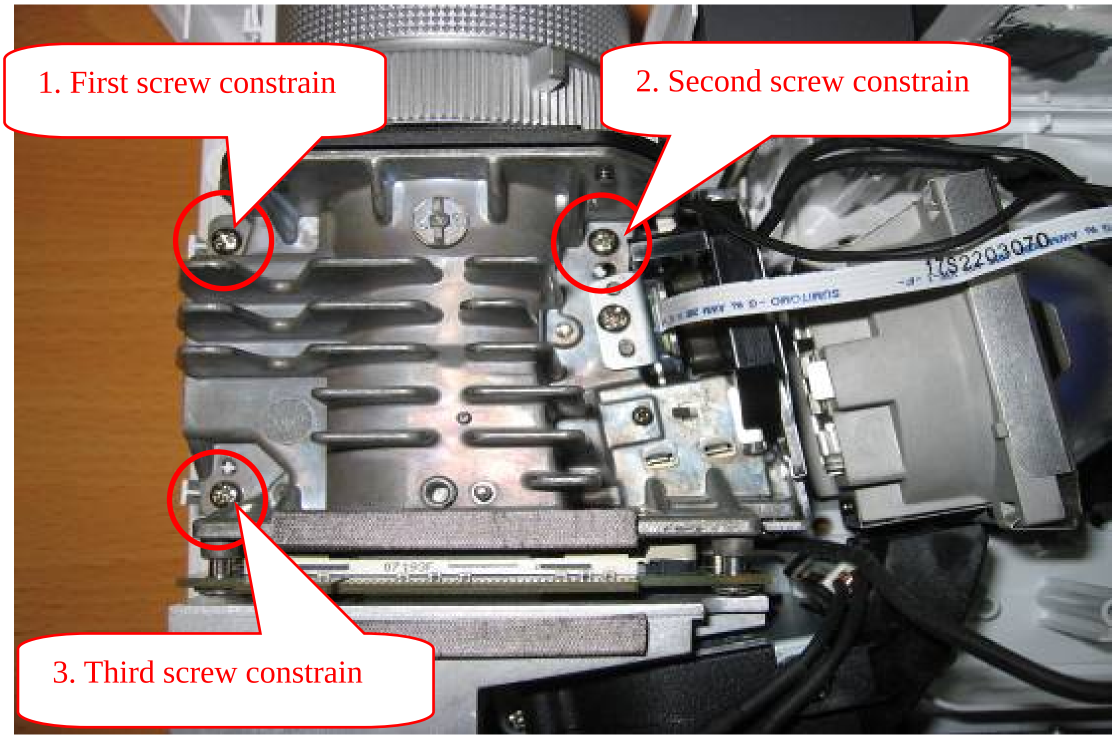


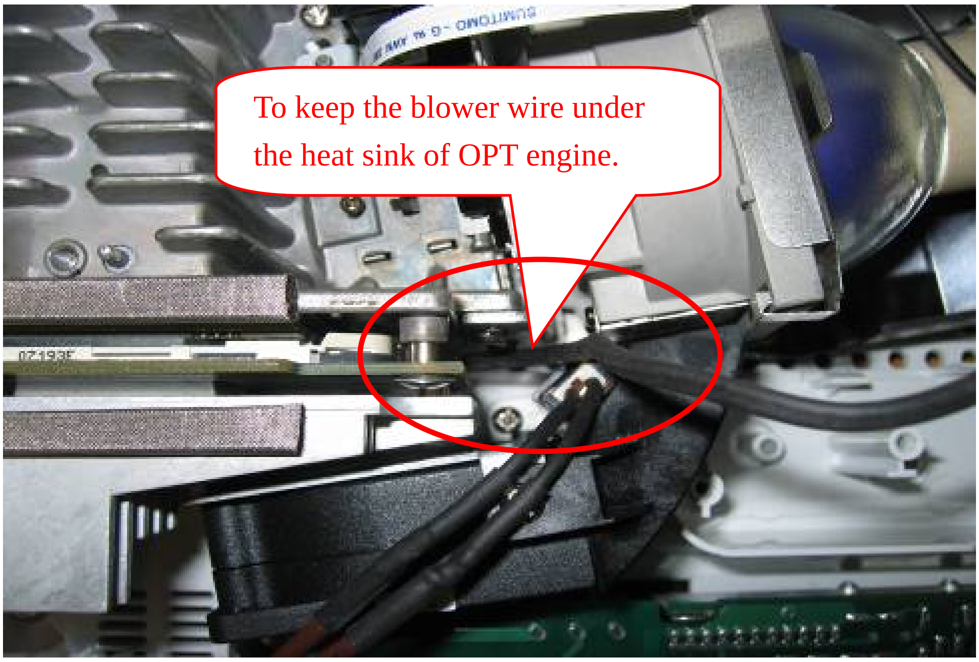
3.2. Blower module assembly and blower wire alignment



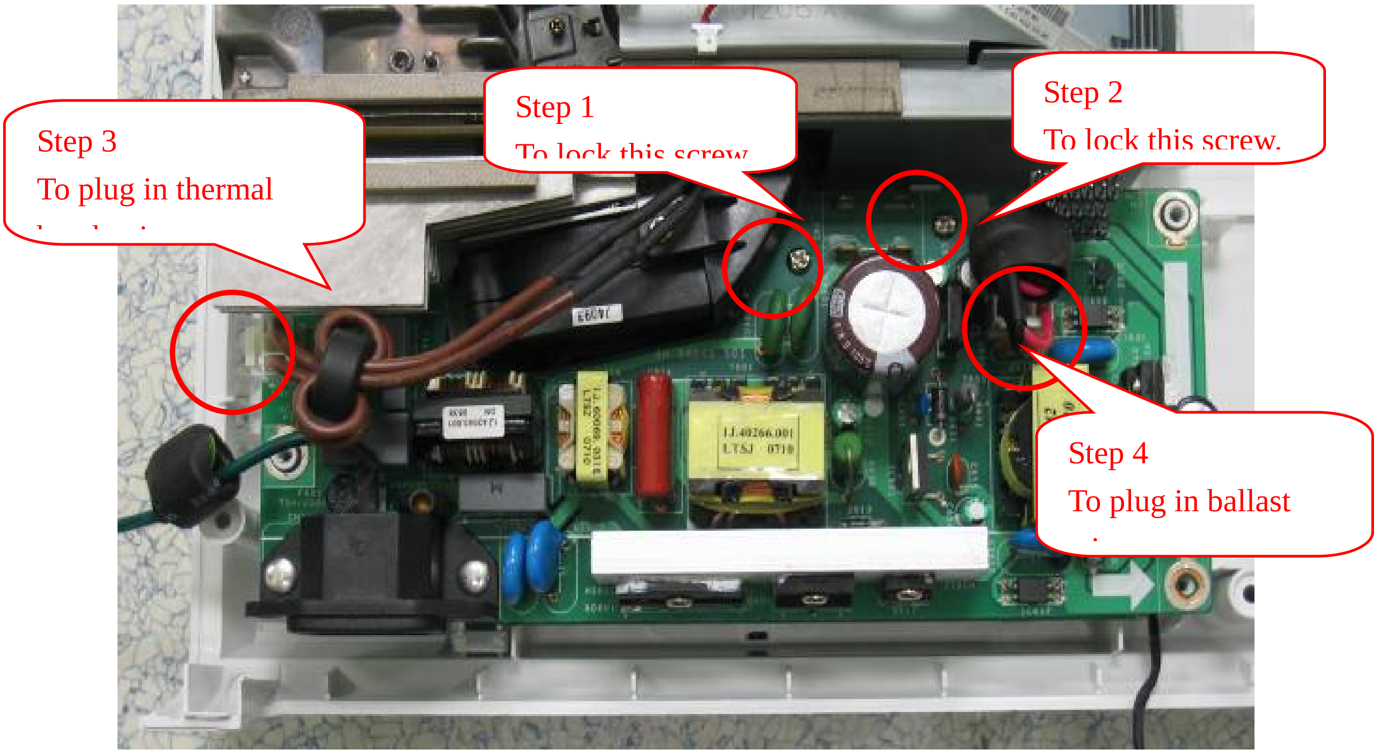


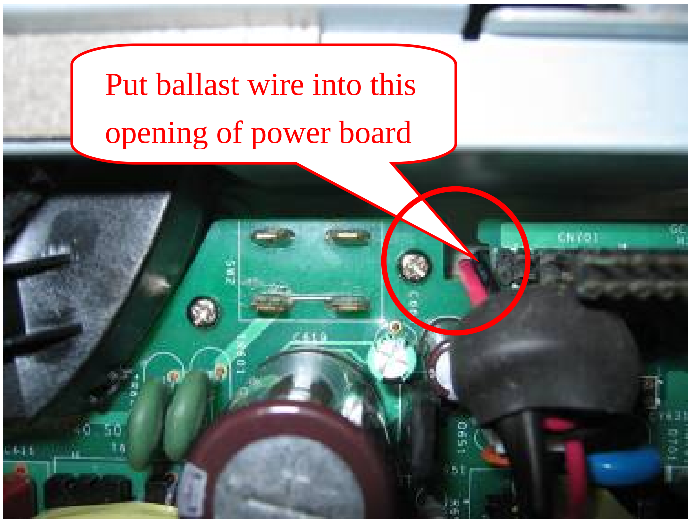
3.3. OPT engine assembly and blower wire alignment



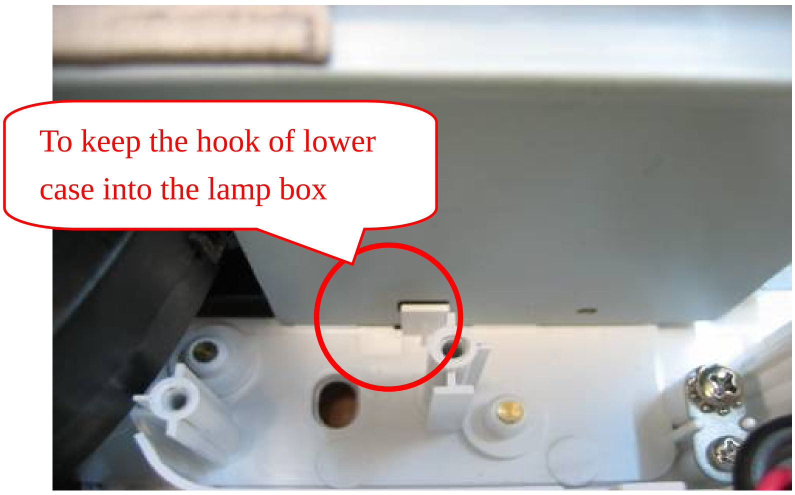


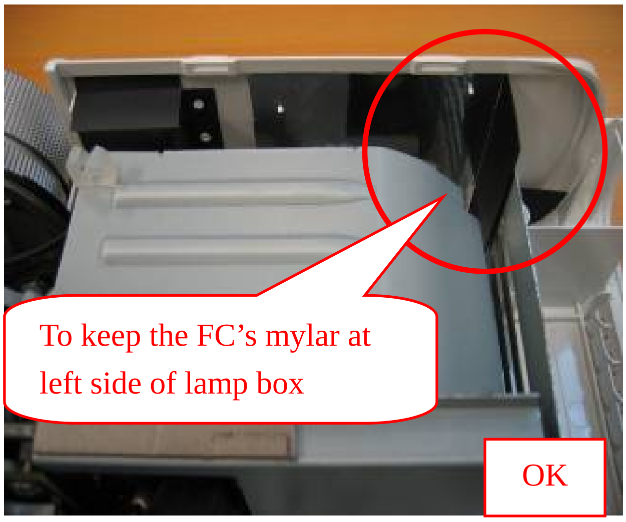
3.4. Power board assembly and power board wire alignment

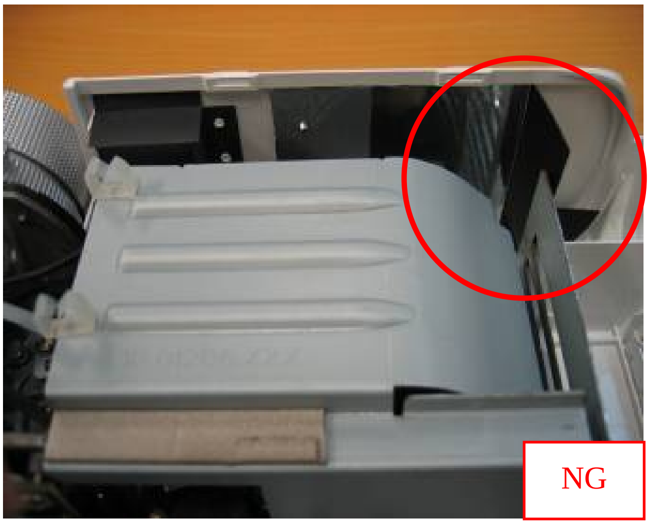




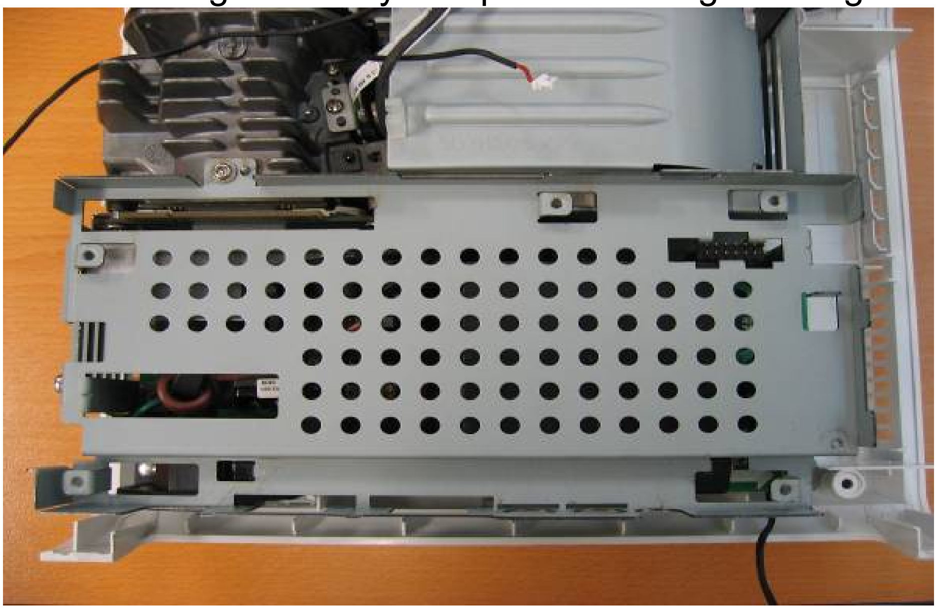
3.5. Lamp box assembly

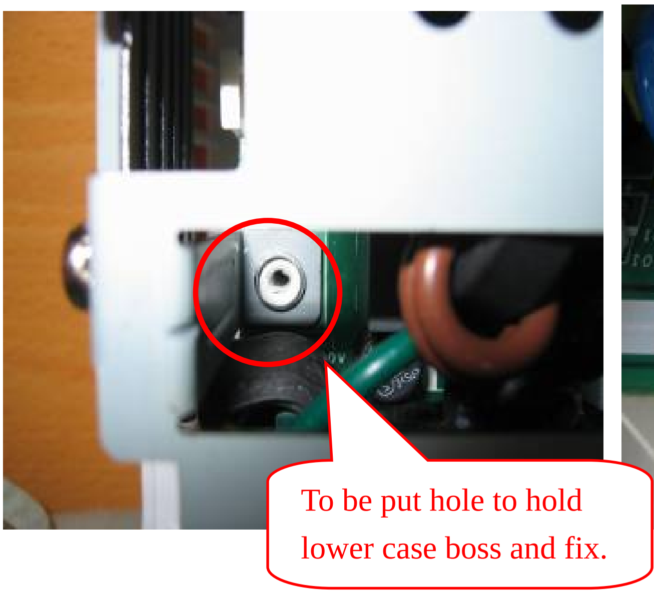


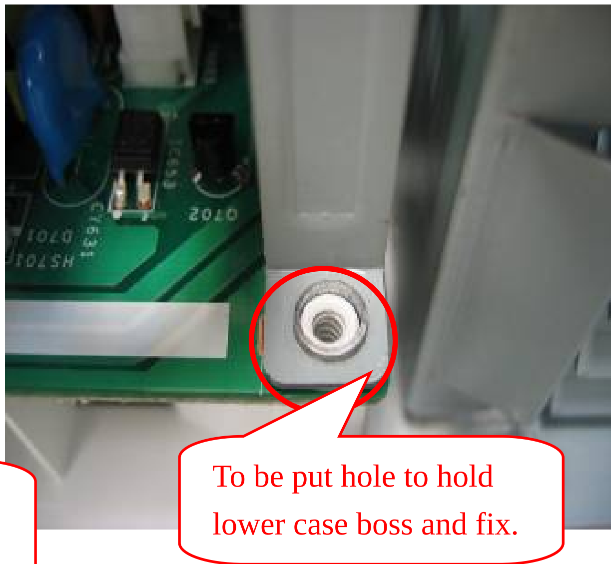


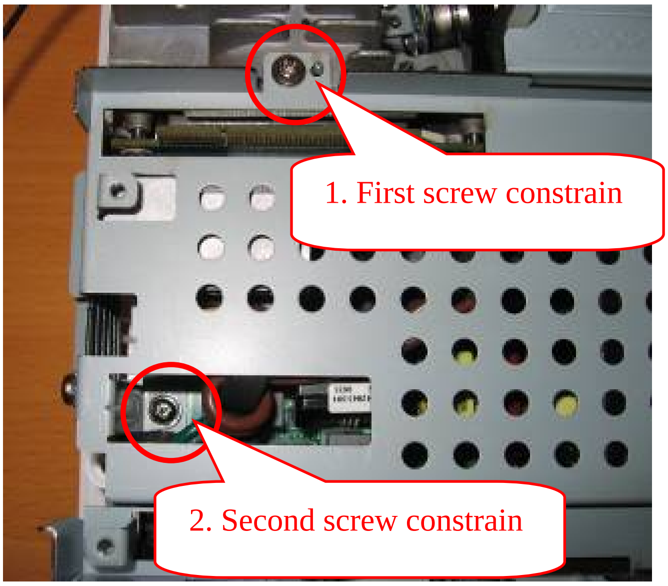


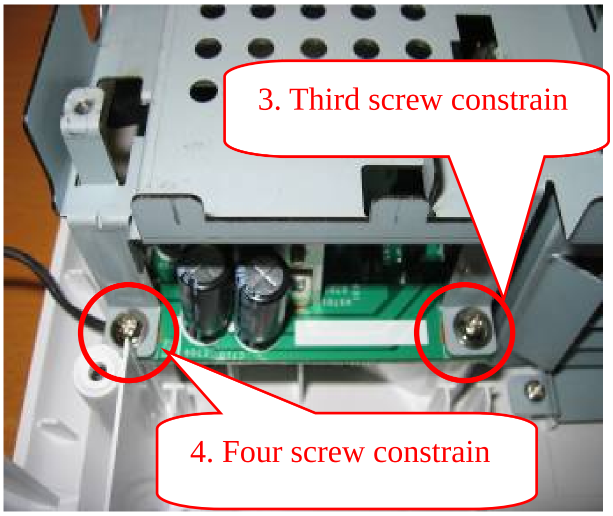
3.6. Power board shielding assembly and power board grounding wire alignment

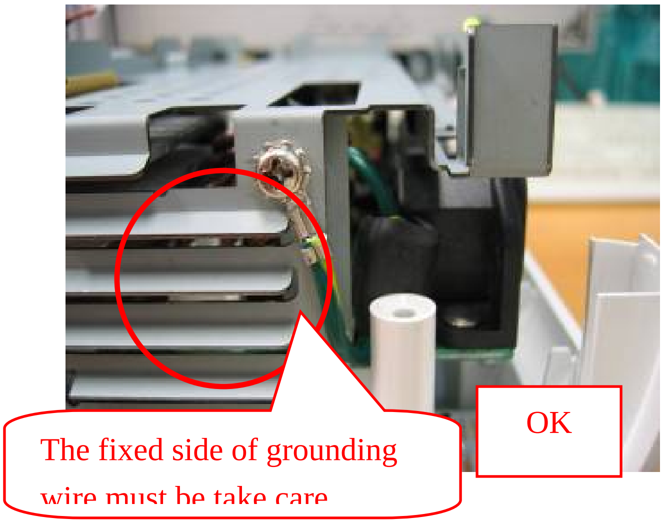


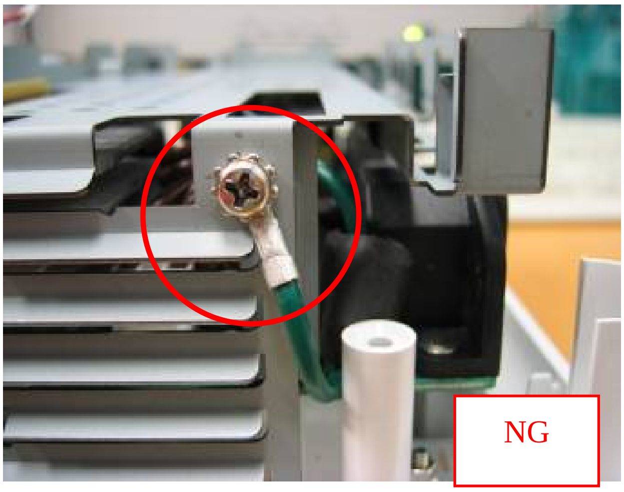




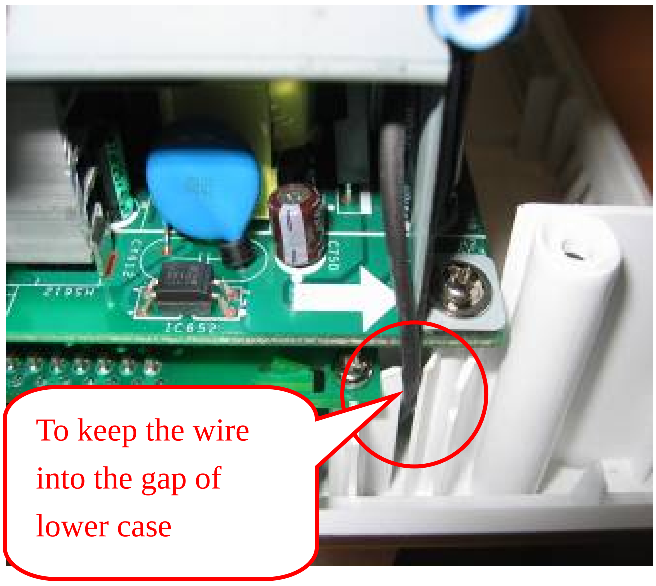








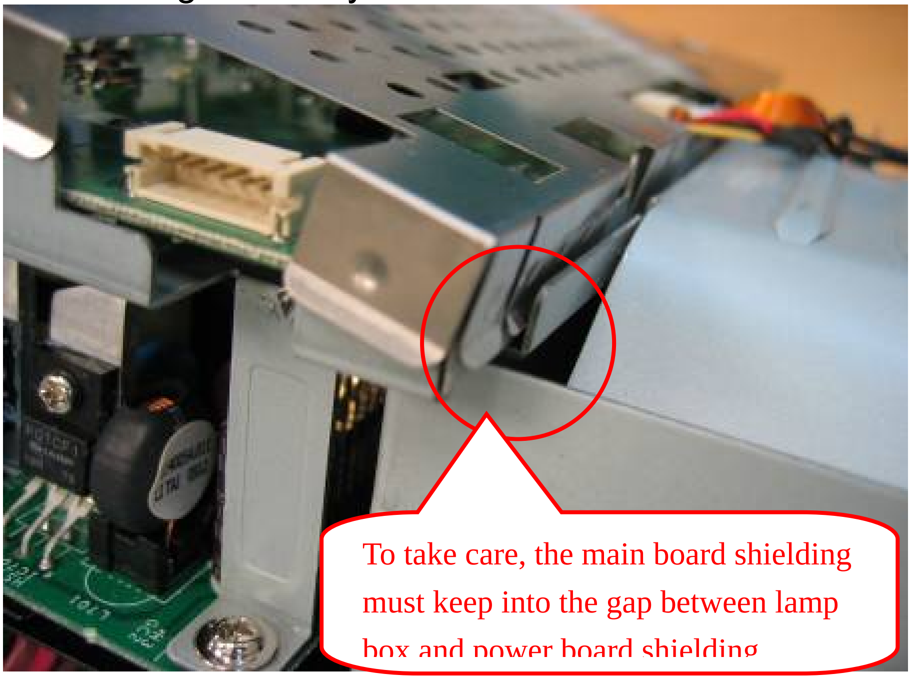
3.7. Main board assembly and ballast wire alignment

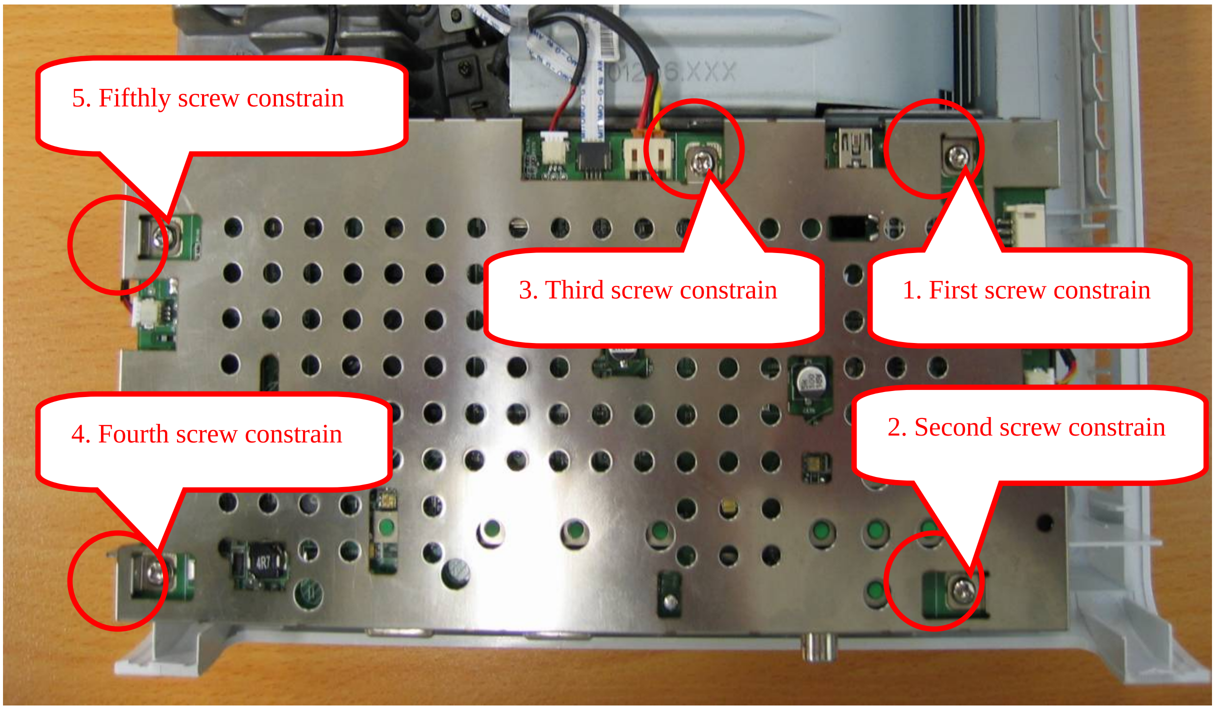




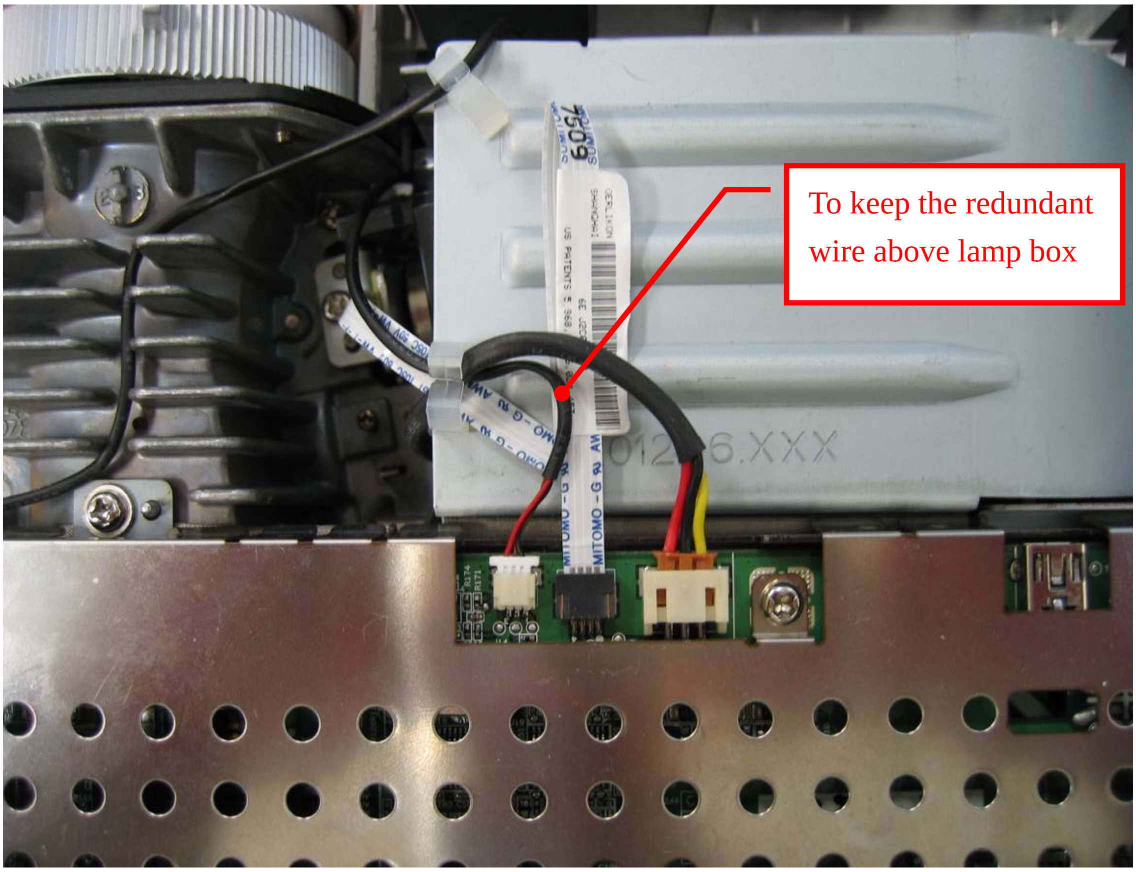
3.8. Main board shielding assembly and wire alignment

a. Main board shielding assembly

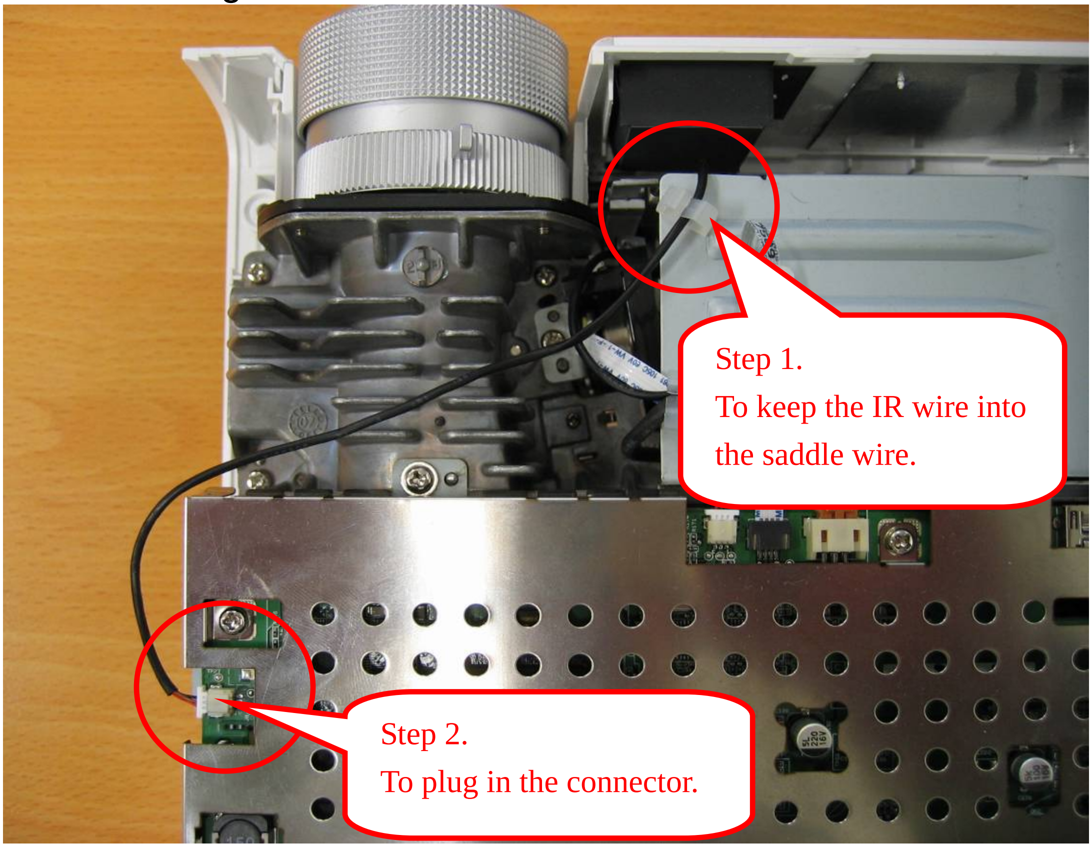


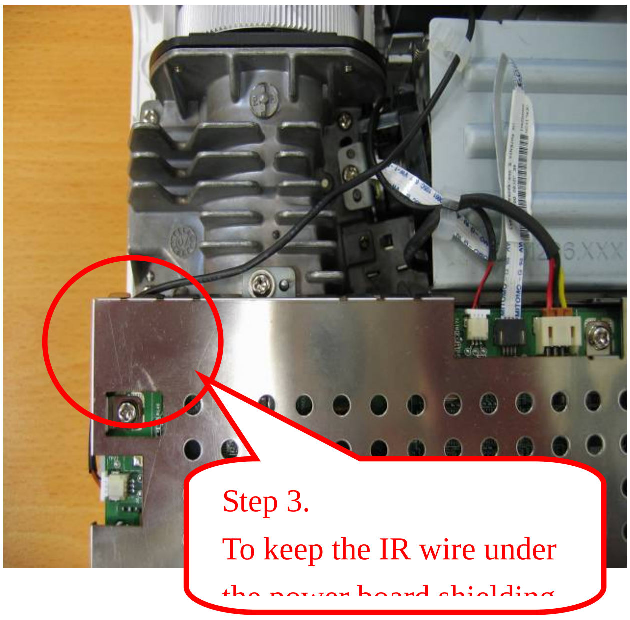


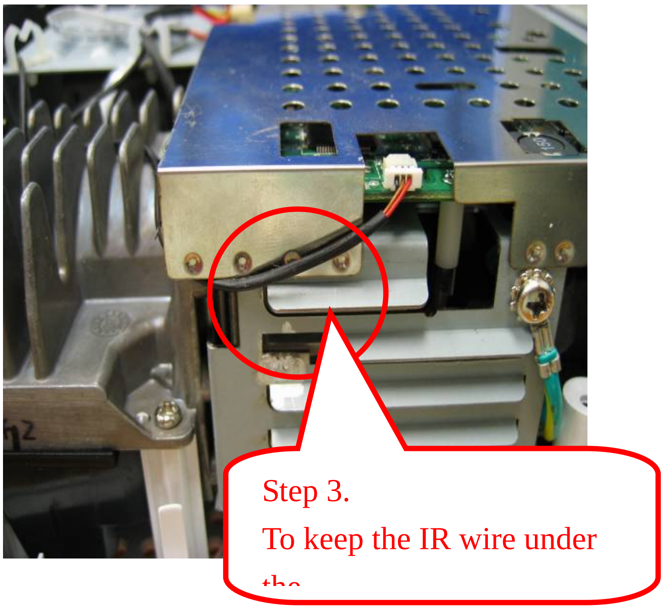
b. C/W FC, C/W sensor wire & blower wire alignment

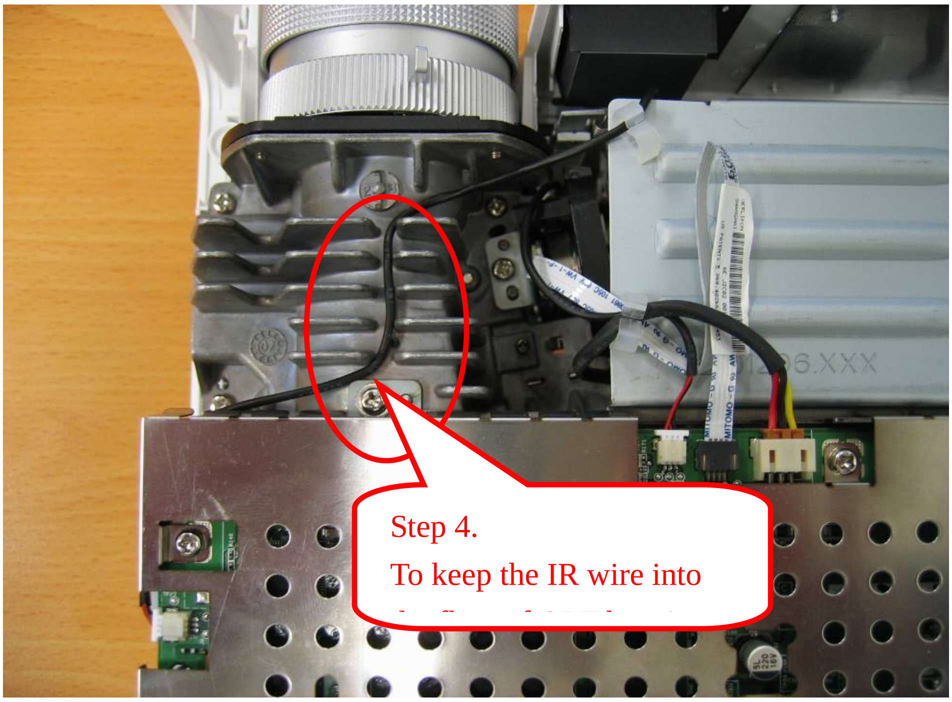


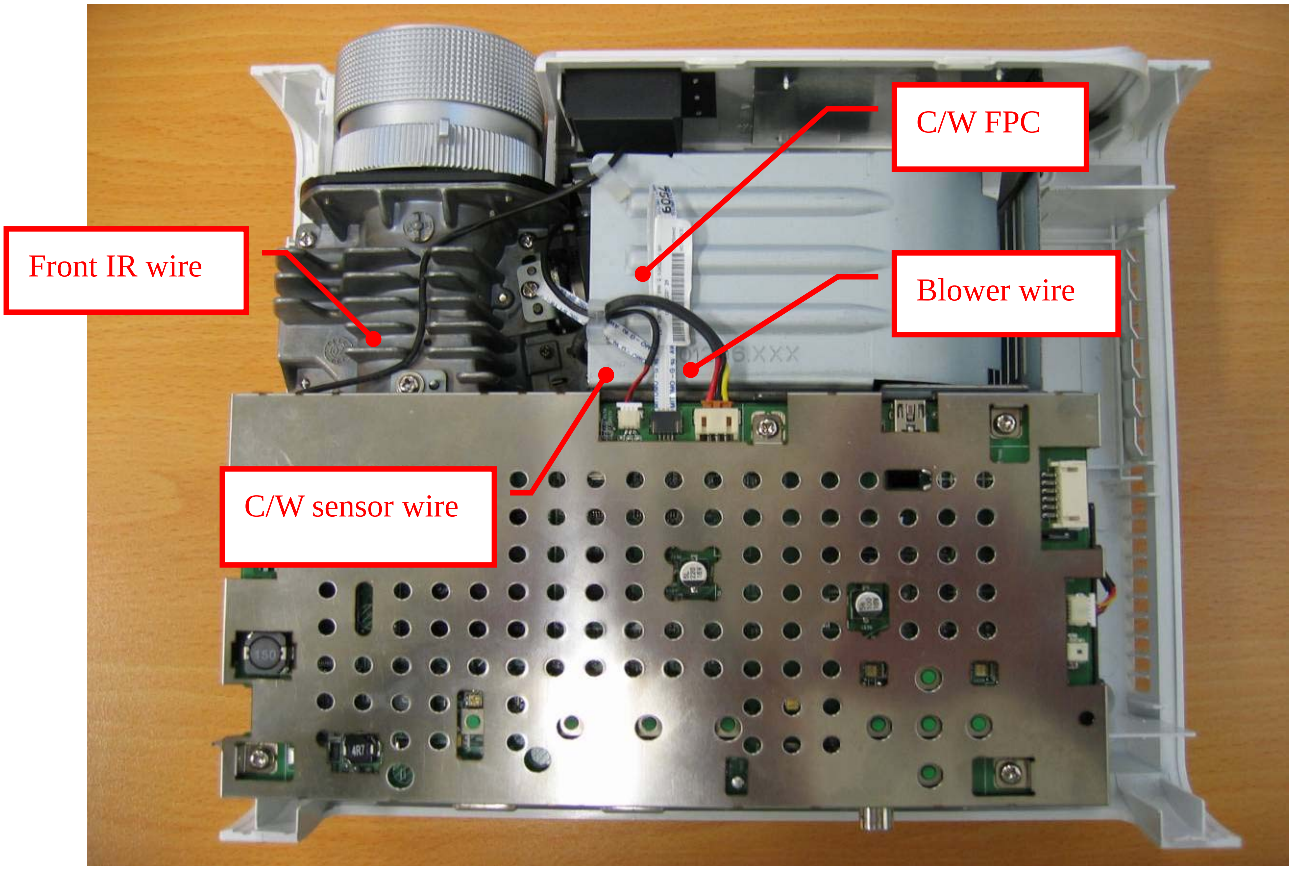
c. Front IR wire alignment



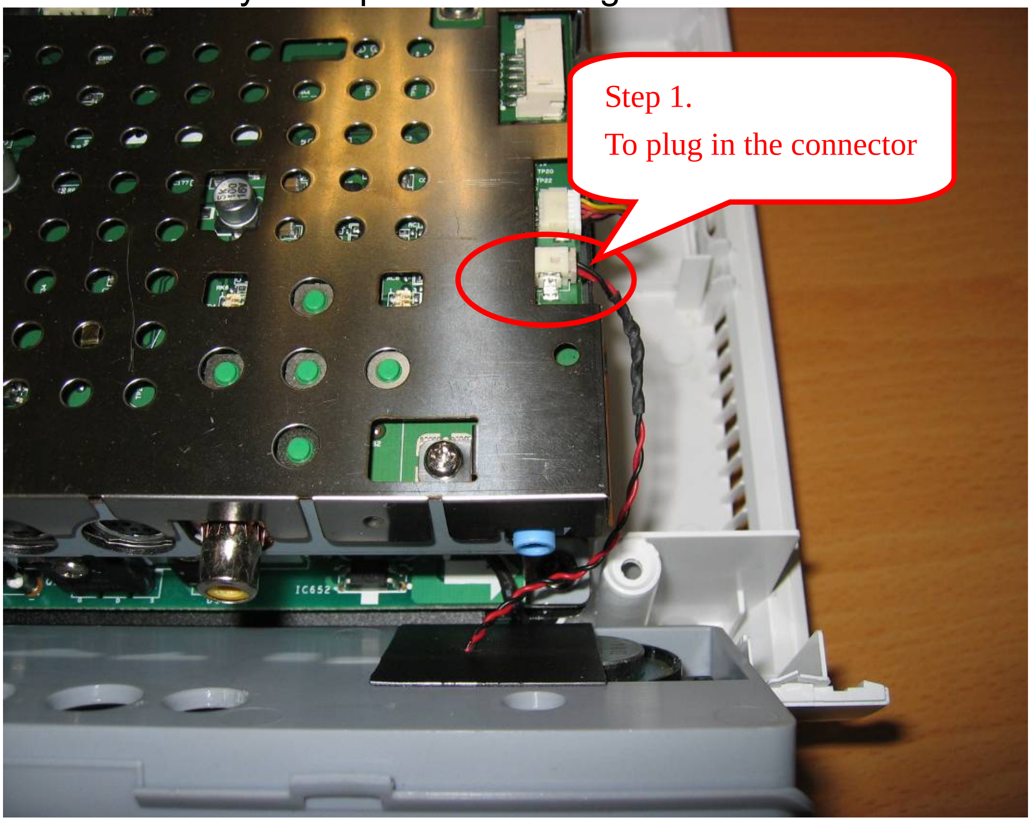

Step 3.
To keep the IR wire under

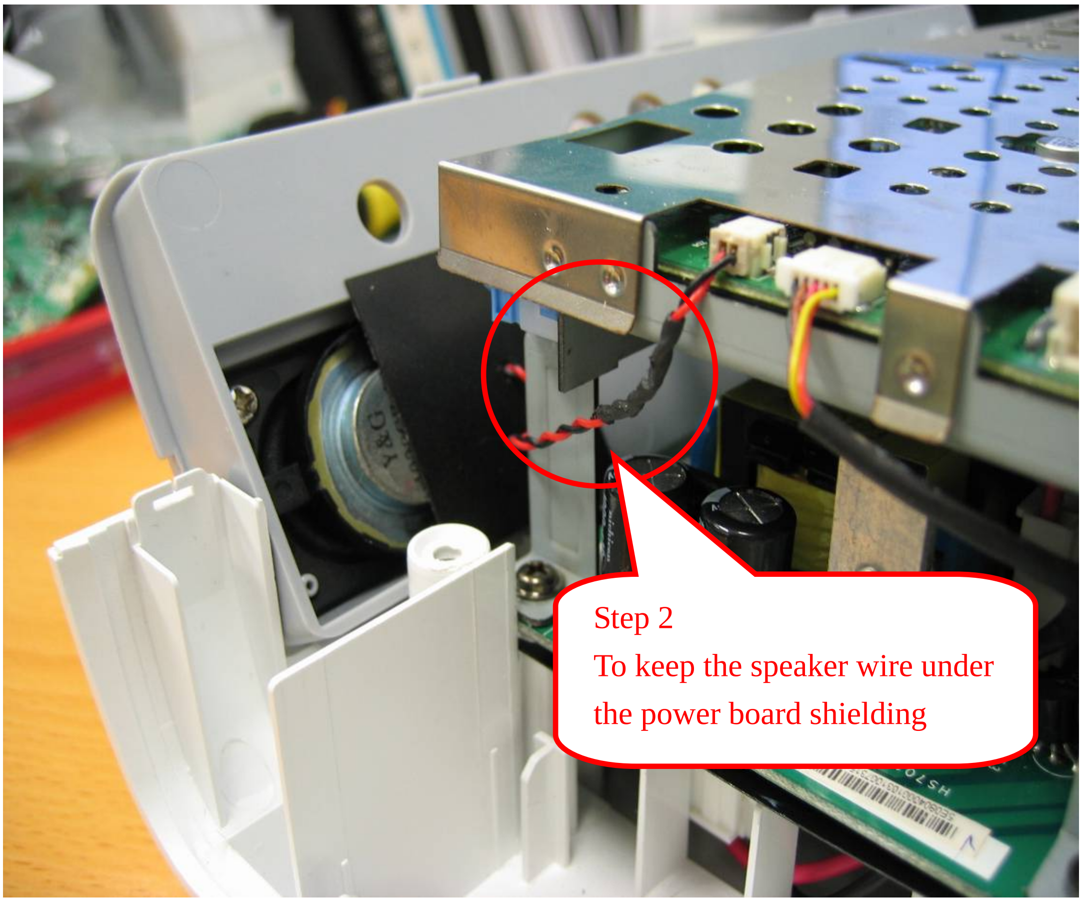

Step 3.
To keep the IR wire under

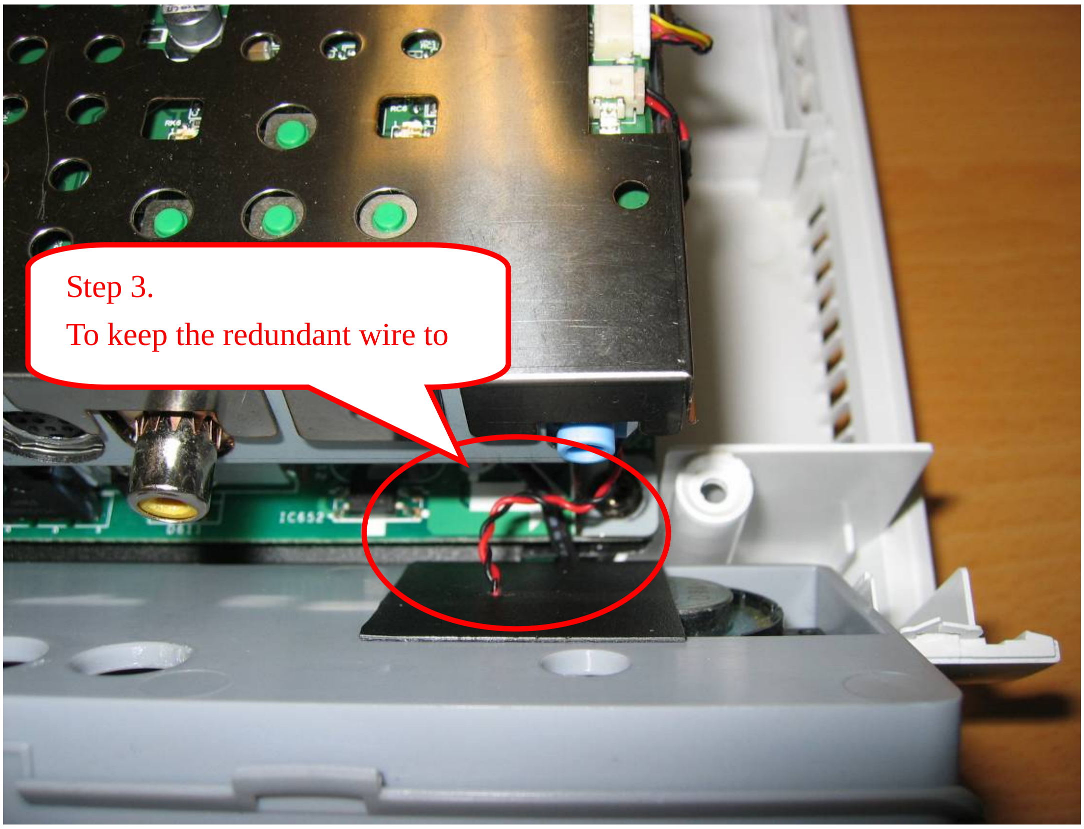

Step 4.
To keep the IR wire into

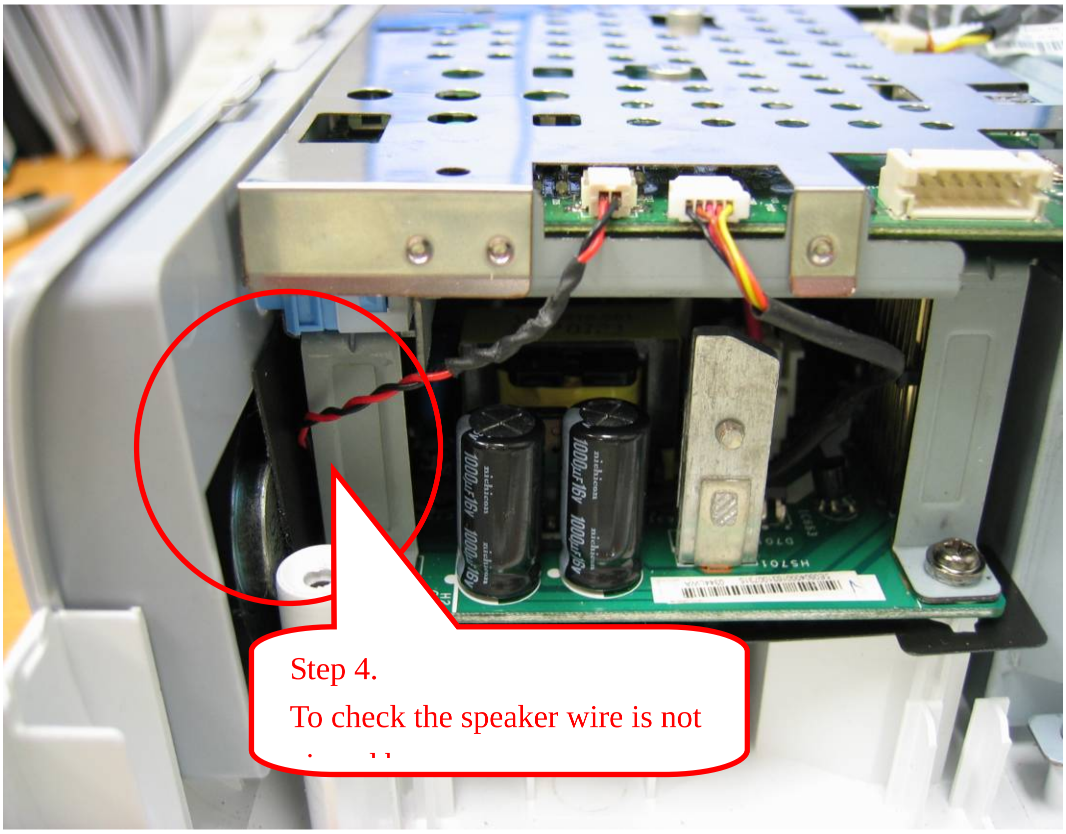


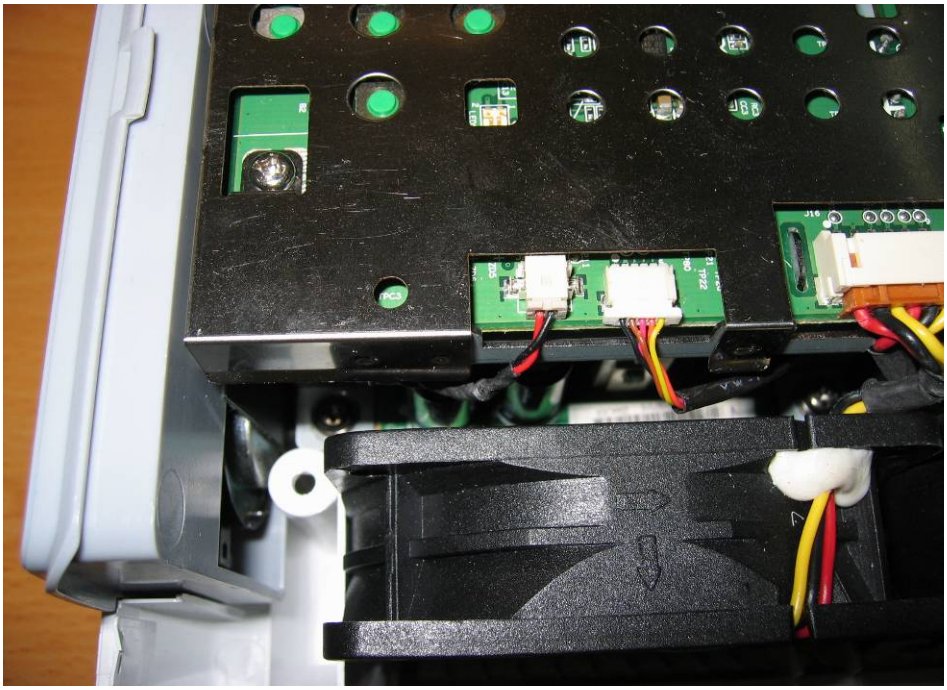
3.9. Rear cover assembly and speaker wire alignment



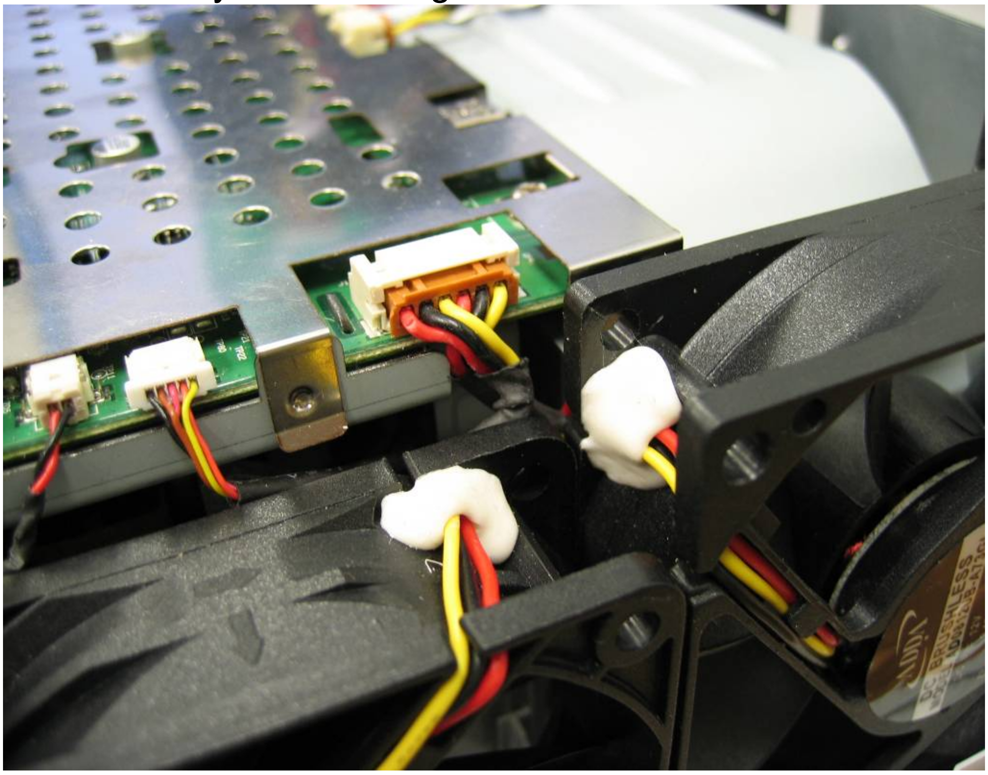

Step 2
To keep the speaker wire under the power board shielding

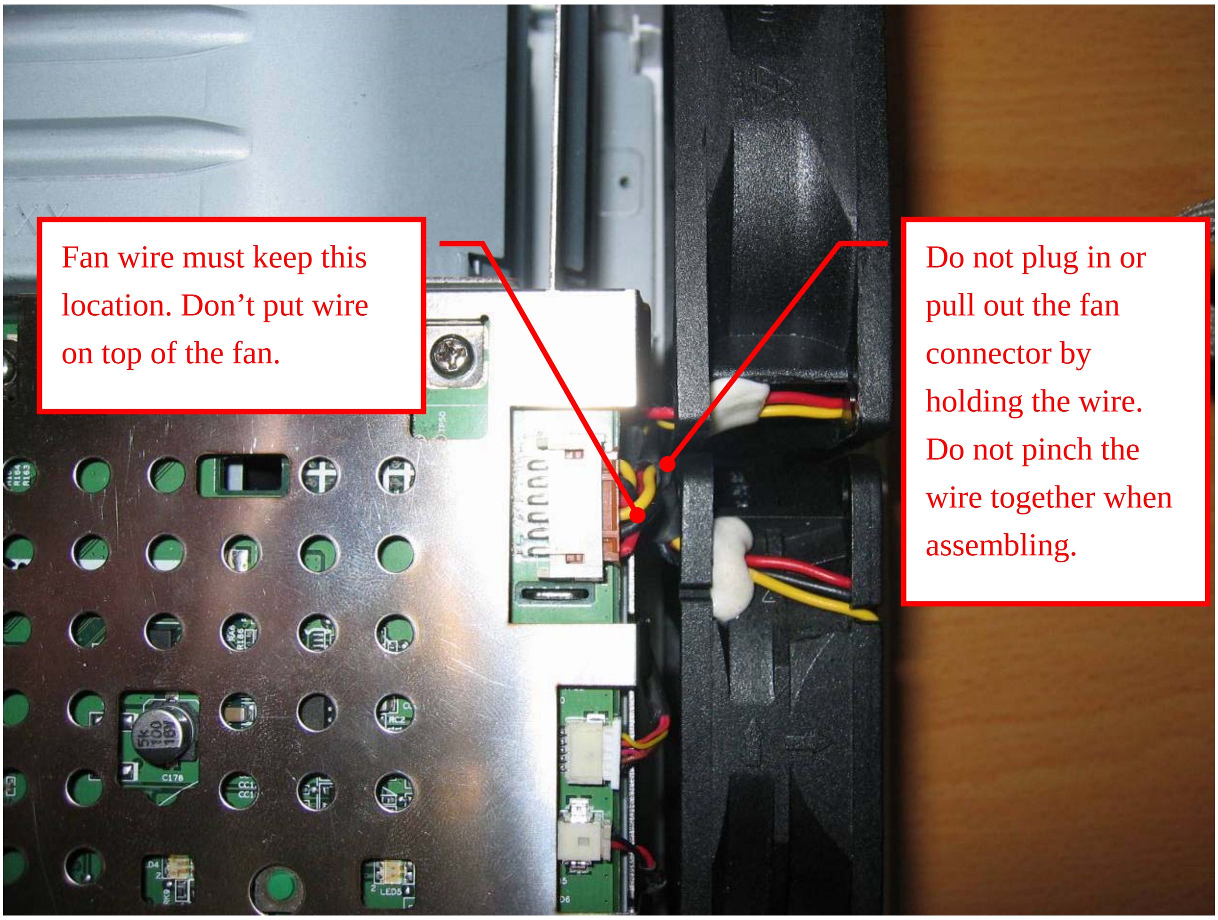

Step 3.
To keep the redundant wire to


Step 4.
To check the speaker wire is not

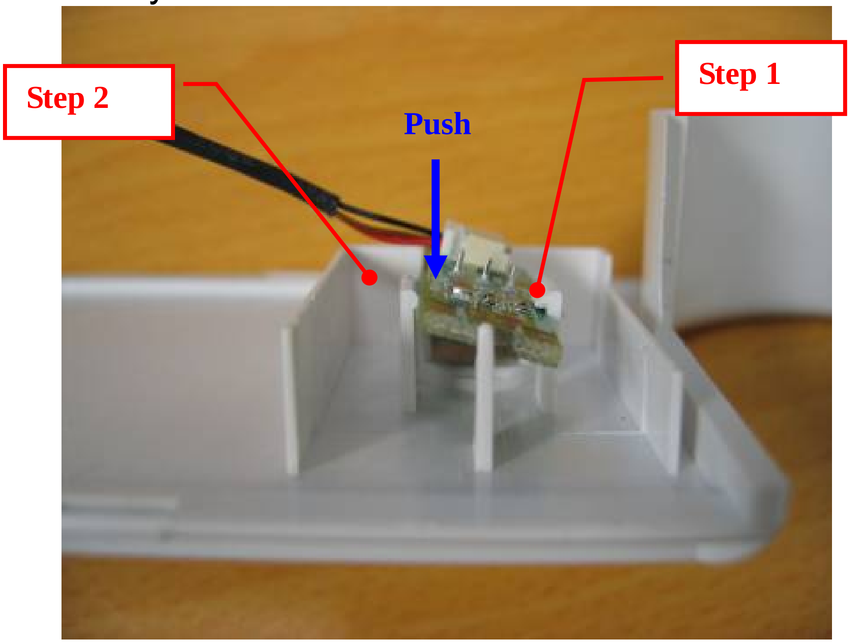


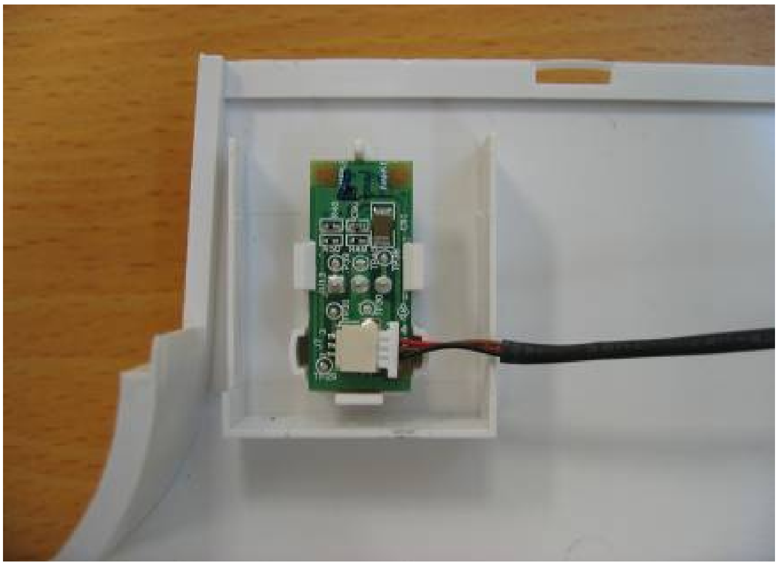
3.10. Twin fans assembly and wire alignment.



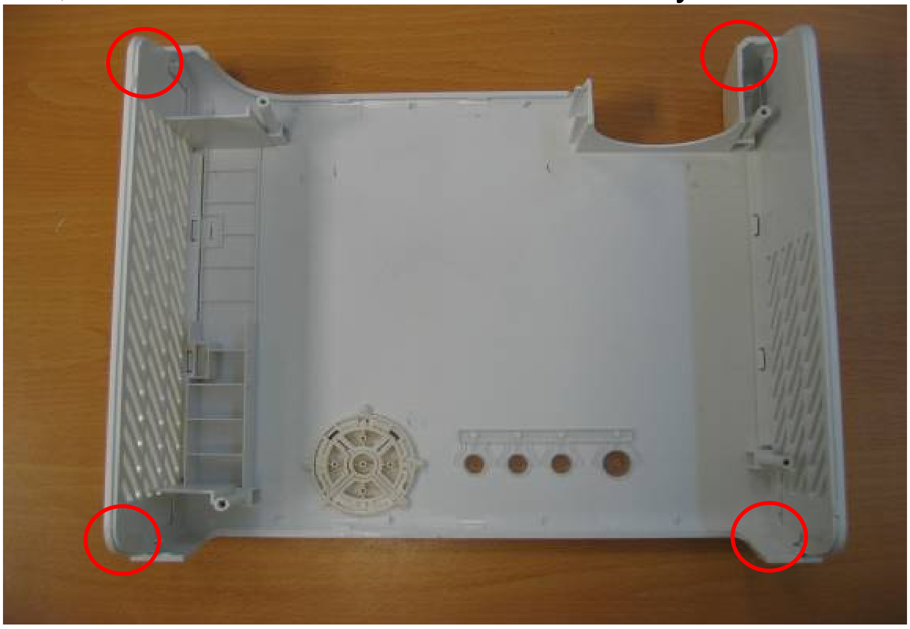


3.11. IR board assembly

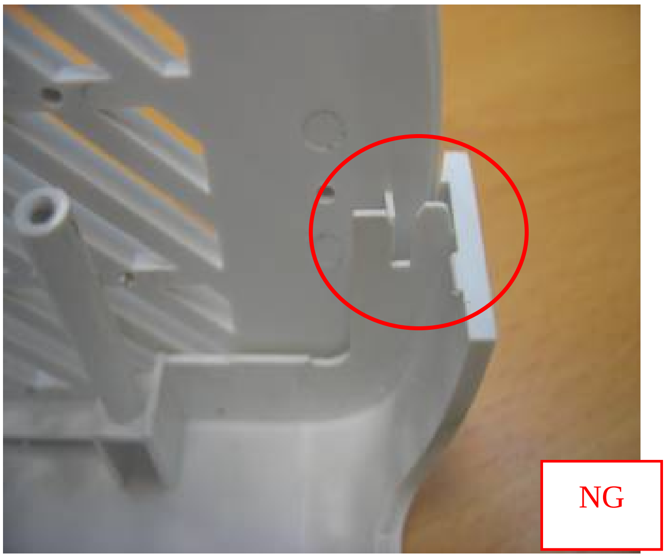




3.12. Upper case, inlet cover and outlet cover assembly



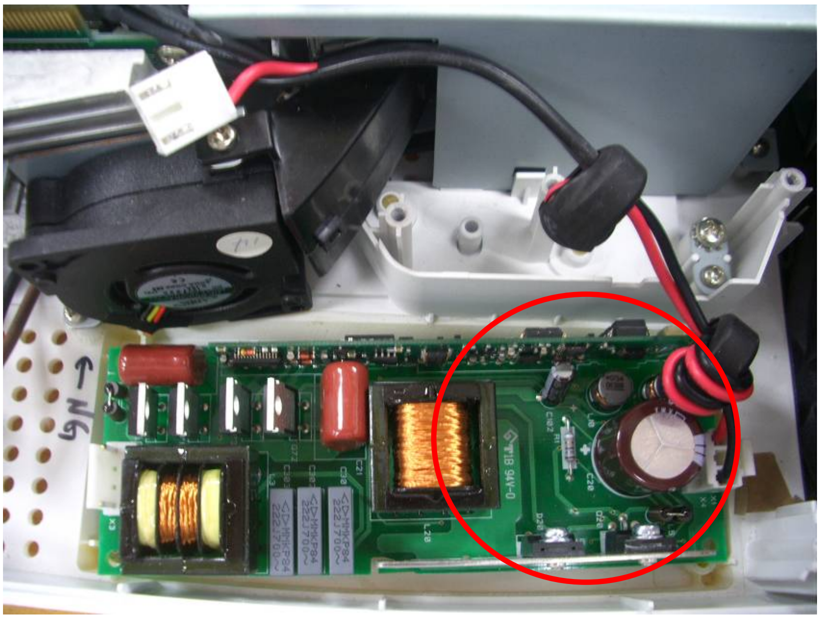




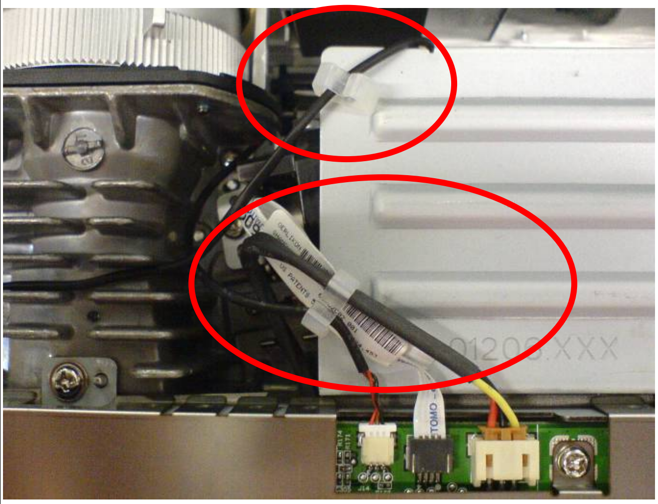
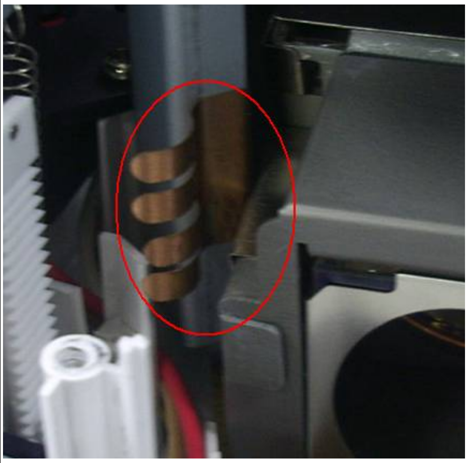
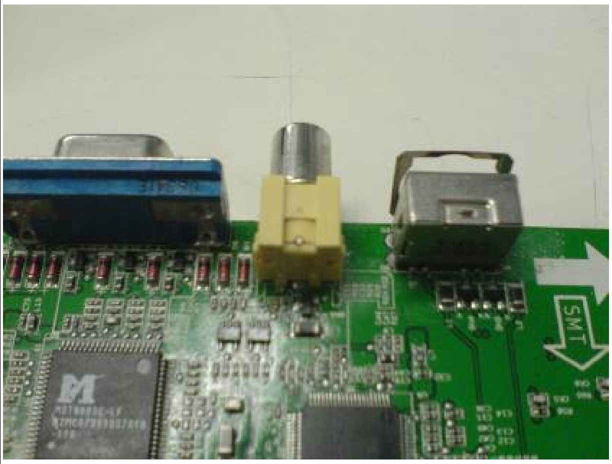
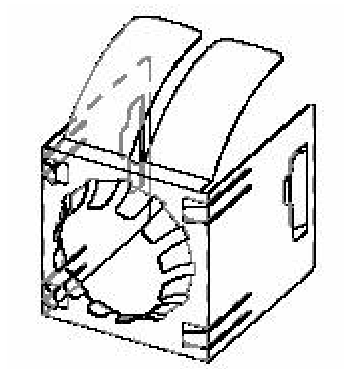
4. Power Assembly Concern

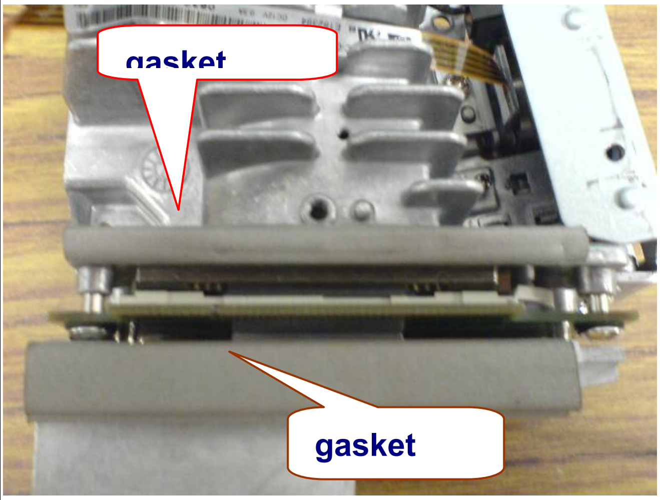
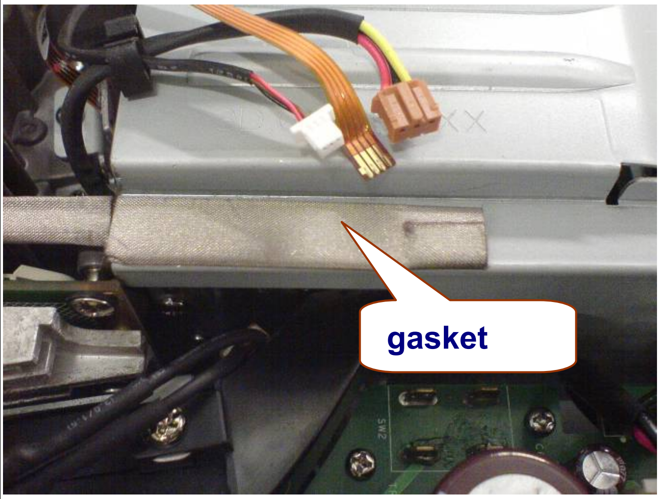
a. The wire from power to ballast --

The connector near the core should be connected with the ballast.



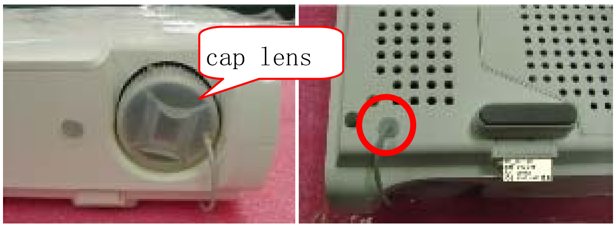
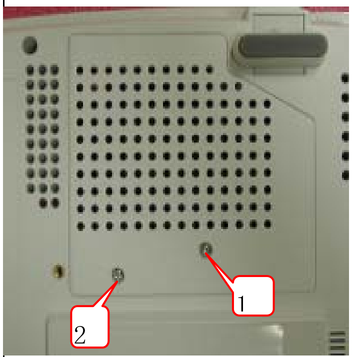
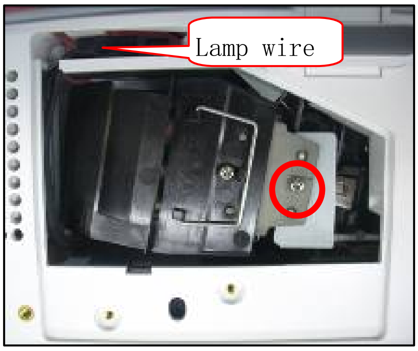
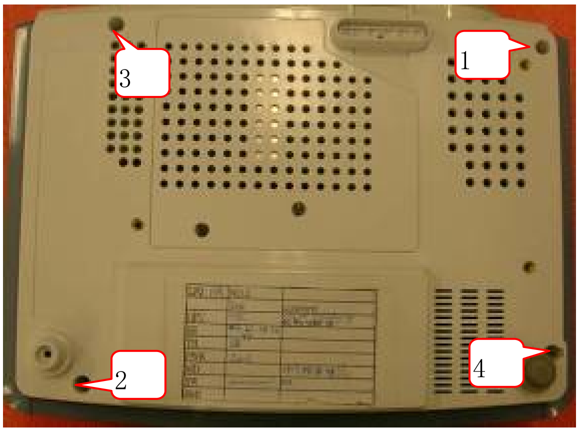
5. EMI Assembly Concern

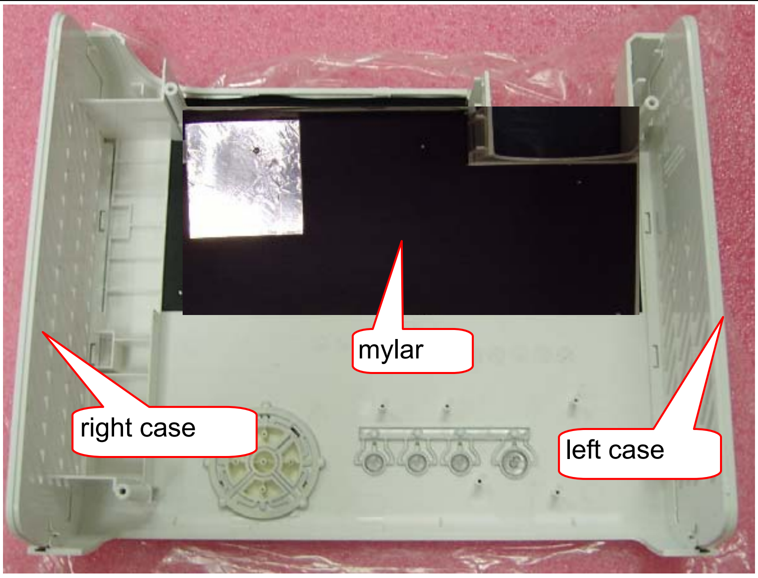
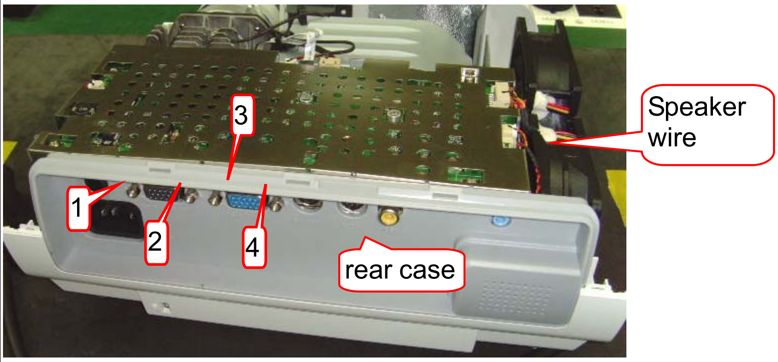
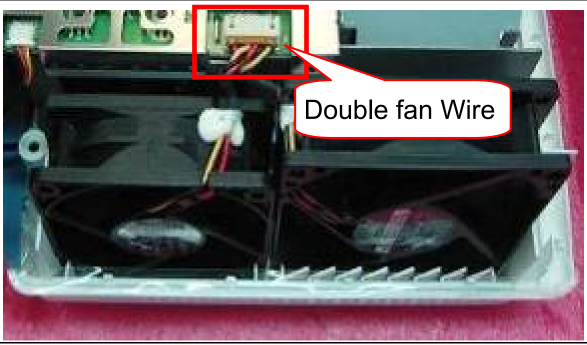
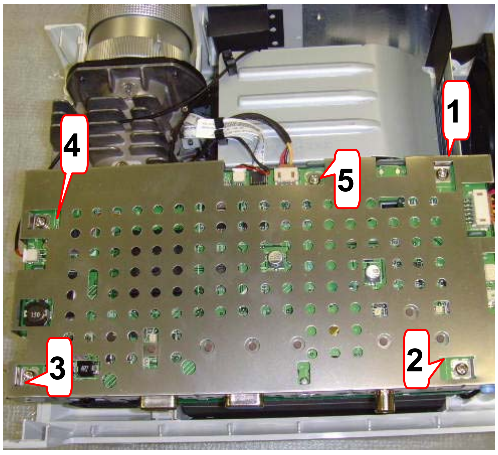
Item	Solution
1.	**Fix the cable at the binding core by this way** 
2.	**Add one spring** 
3.	**Add one spring**  

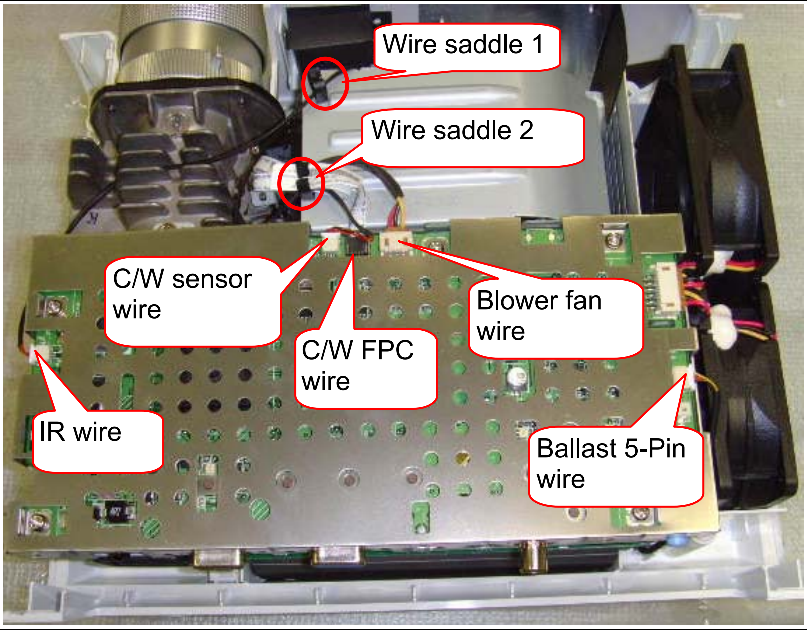
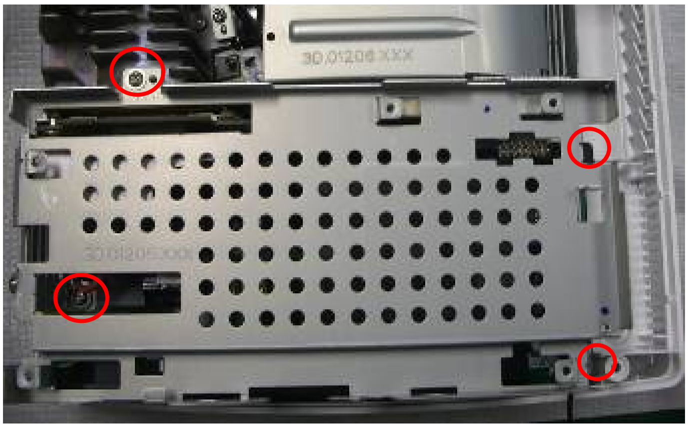
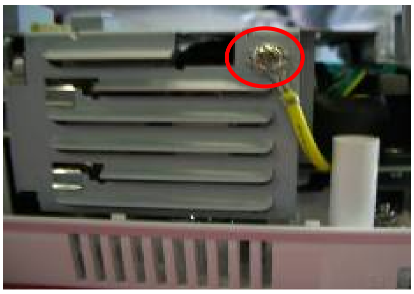
Item	Solution
4.	Add two gasket 
5.	Add one gasket 

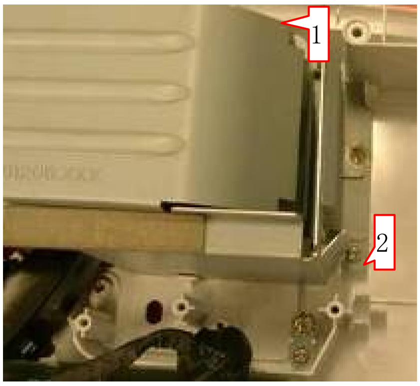
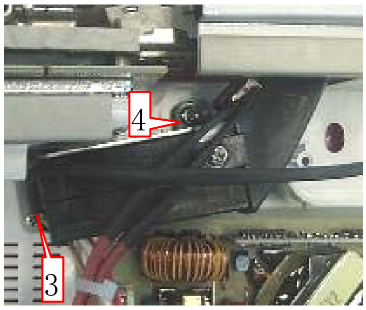
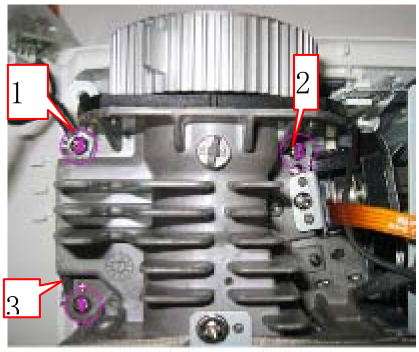
Disassembly/Assembly

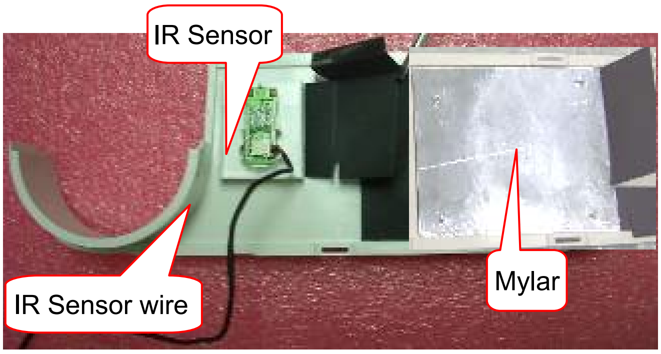
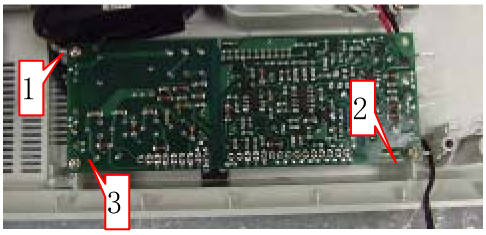
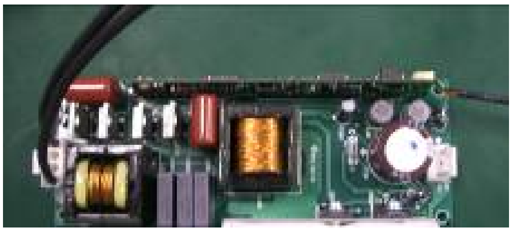
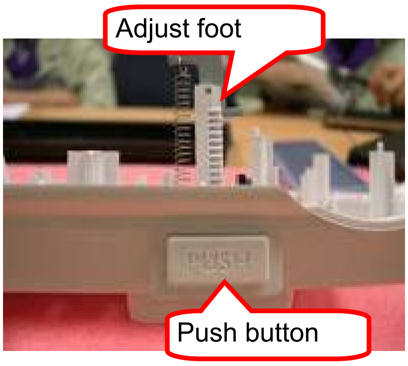
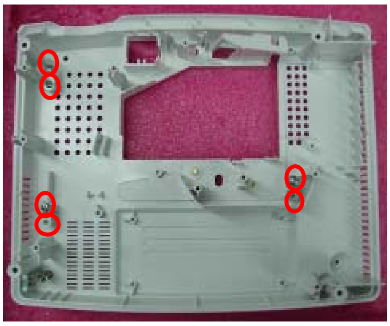
Disassembly SOP

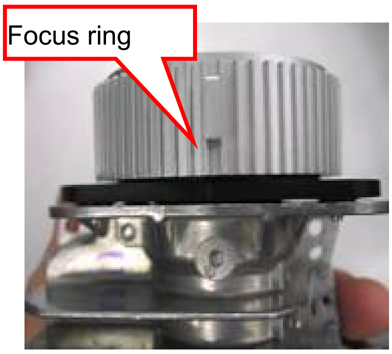
PJ513D Dismantle SOP			
Step	**Description**		**Parts**
1	take off the cap lens		cap lens
2	disassembly the screw*2, and take off the lamp door, disassembly the screw*1 and lamp wire, take off the lamp module.	 	screw*3, lamp door, lamp wire, lamp module
3	disassembly the screw*4		screw*4
4	take off the upper case module	 	upper case module

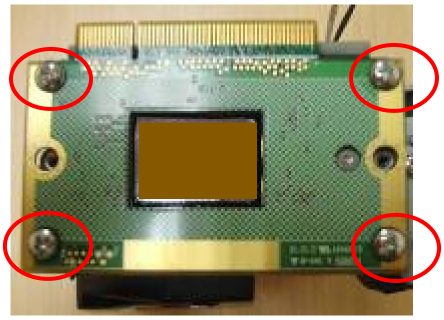
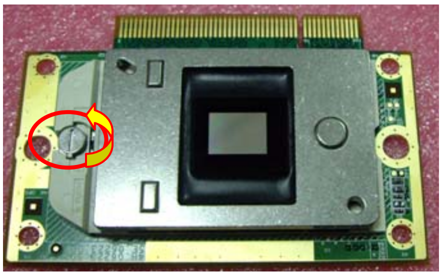
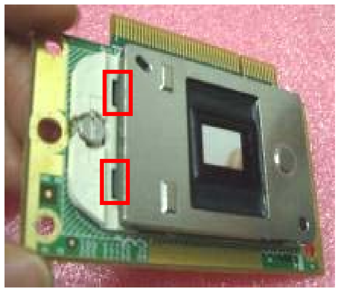
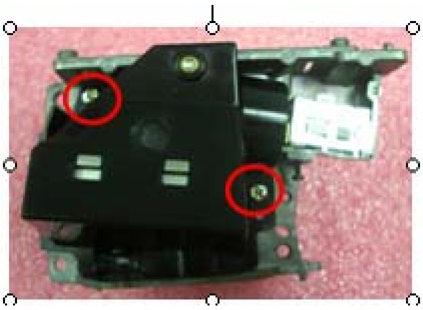
5	take off the upper case mylar, left and right case module from upper case		upper case mylar, left and right case module
6	disassembly the screw*4,take off the Speaker wire and rear case		screw*4, Speaker wire, rear case
7	disassembly the double fan, and take off the double fan wire		double fan, double fan wire
8	disassembly the screw*5, and take off the M/B shielding		screw*5, M/B shielding

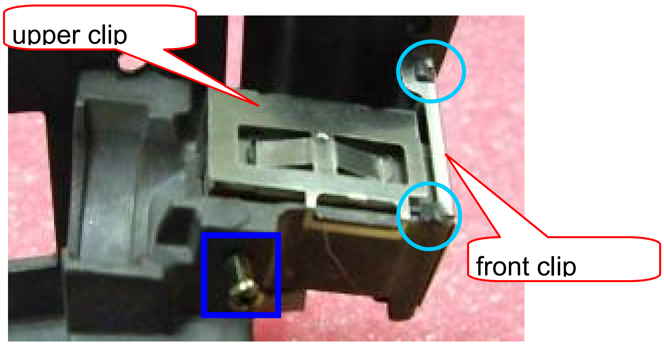
9	take off the C/W FPC wire, blower fan wire, C/W sensor wire, Ballast 5-Pin wire, IR wire, wire saddle*2		C/W FPC wire, blower fan wire, C/W sensor wire, Ballast 5-Pin wire, IR wire, wire saddle*2
10	take off the M/B		M/B
11	disassembly the screw*4, disassembly the grounding screw*1 and take off the Power B/D SHD	 	screw*5, Power B/D SHD

12	disassembly the wire*2 and screw*2, take off the power BD and ballast Mylar	 	wire*2 screw*2, power BD, ballast Mylar
13	disassembly the screw*4, take off the lamp box and the blower fan	 	screw*4, lamp box, blower fan
14	disassembly the screw*3, take off the OPT eng and IR wire.		screw*3, OPT eng, IR wire
15	take the Front case module		Front case module

16	take off the Front case mylar, IR Sensor and IR Sensor wire module from Front case		Front case mylar, IR Sensor, IR Sensor wire
17	disassembly the screw*3 and the ballast BD, wire*3		screw*3, ballast BD, wire*3
18	take off the push button and the adjust foot, disassembly the screw*6 and clip*3, the left is lower case		push button, adjust foot, screw*6, clip*3, lower case
19	take off the sponge, disassembly the screw*2 and DMD HSINK		sponge, screw*2, DMD HSINK

20	disassembly the screw*2,take off the CW shielding, disassembly the screw*1 and take off the CW module	 	screw*3, CW shielding, CW module
21	Remove FOCUS ring		FOCUS ring
22	disassembly the screw*3, take off the PL ass'y		screw*3, PL ass'y

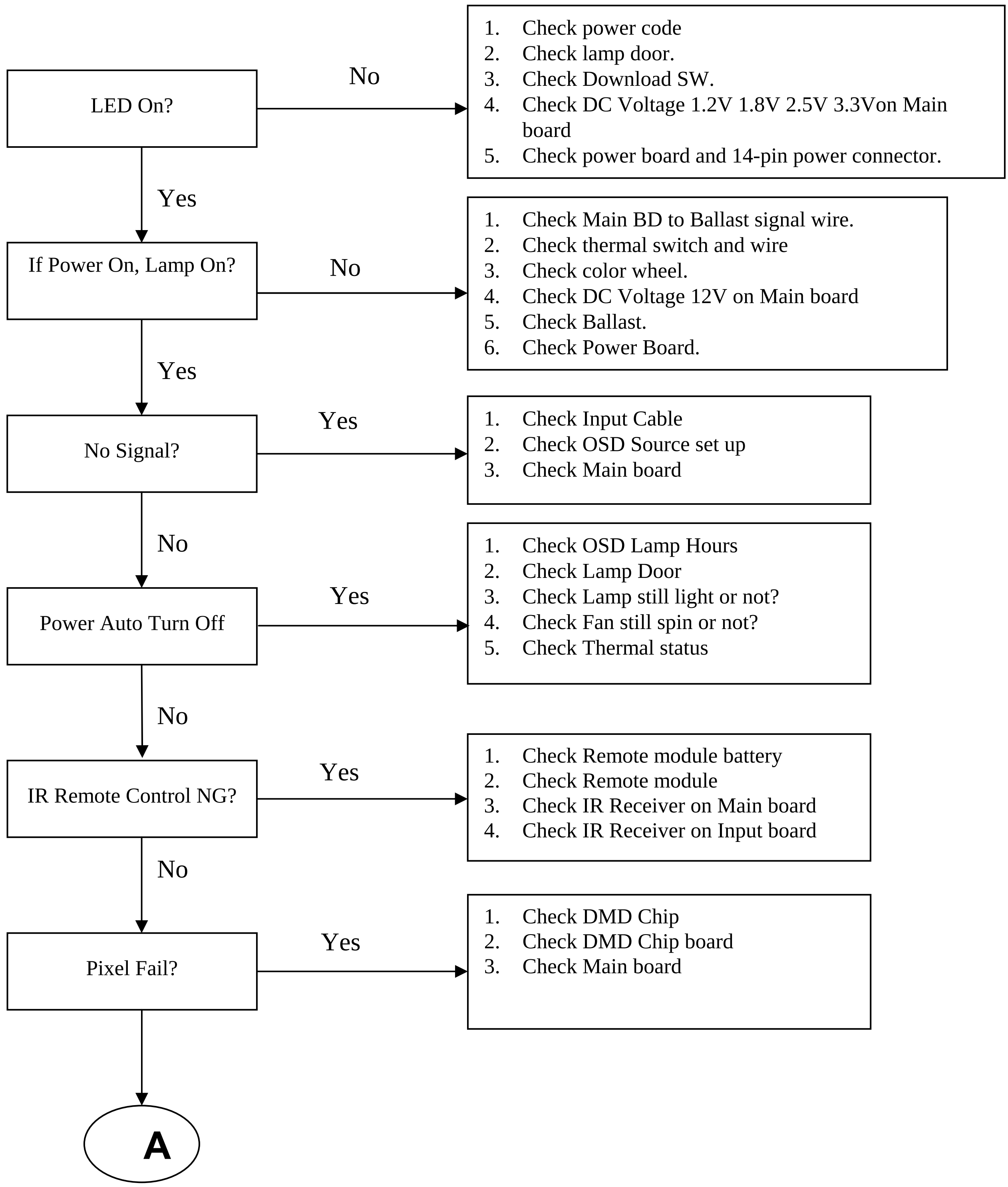
23	disassembly the screw*4, and take off the Chip BD module , take off the Baffle DMD	  	screw*4, Chip BD, Baffle DMD
24	rotate the screw, take off the DMD IC, take off the Thermal PAD	   	DMD IC, Thermal PAD
25	disassembly ILL MODULE(screw*2),sponge, ASPH lens	 	ILL MODULE, screw*2, sponge, ASPH lens

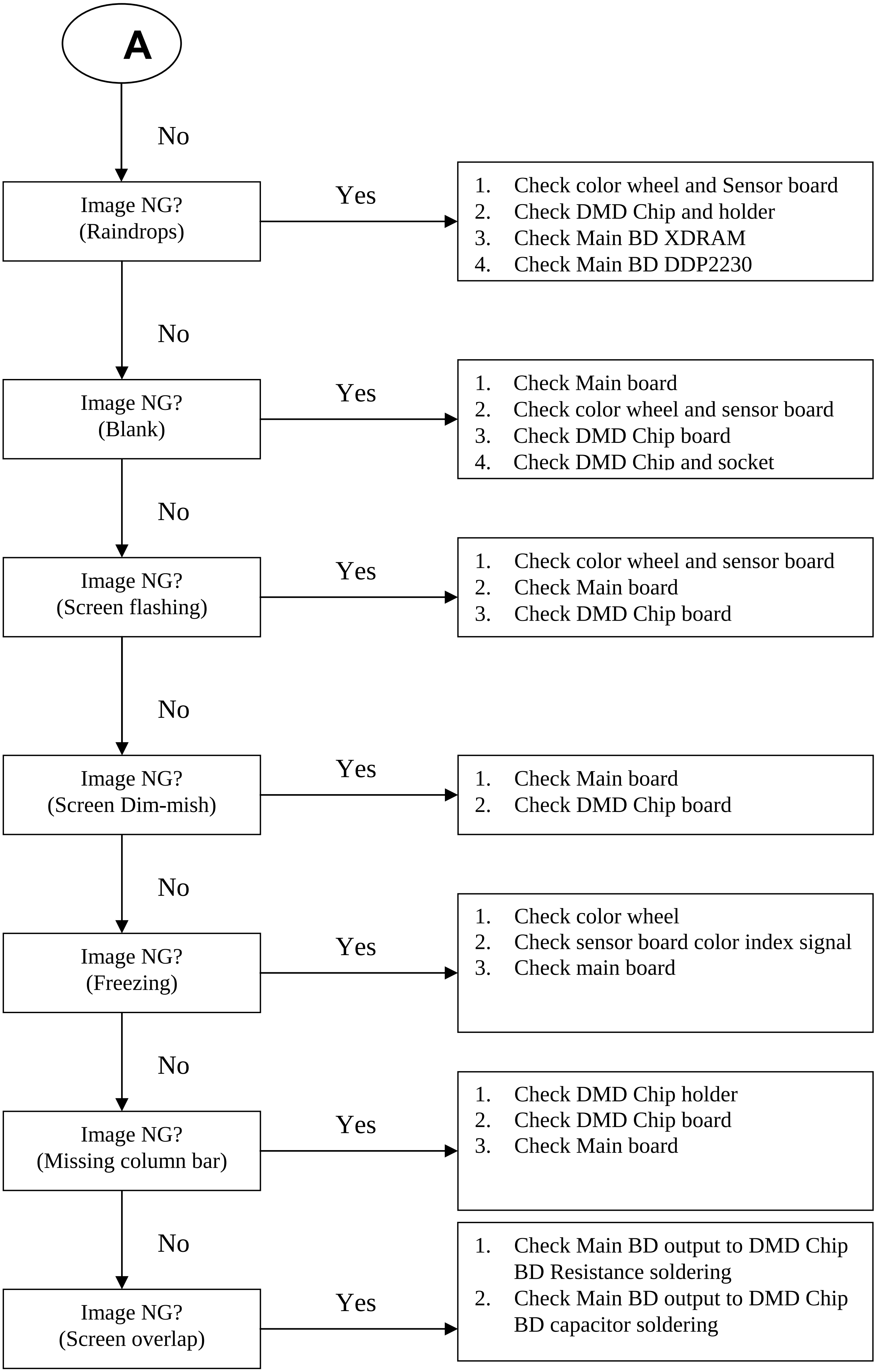
26	disassembly the front clip and upper clip, then take off the LP module, adjust screw*2		front clip, upper clip, LP module, adjust screw*2
27	disassembly HSG baffle and screw*1 from HSG		HSG baffle, screw*1

6. Troubleshooting Flow Chart

1. System Trouble Shooting Flow Chart

System Trouble Shooting Flow Chart

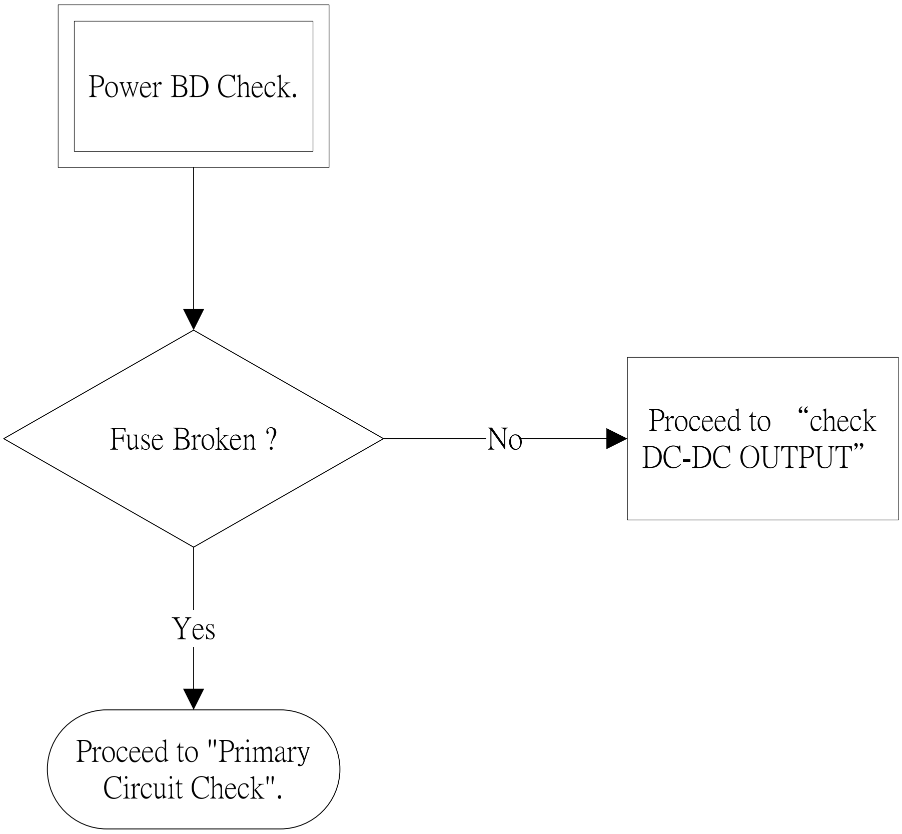


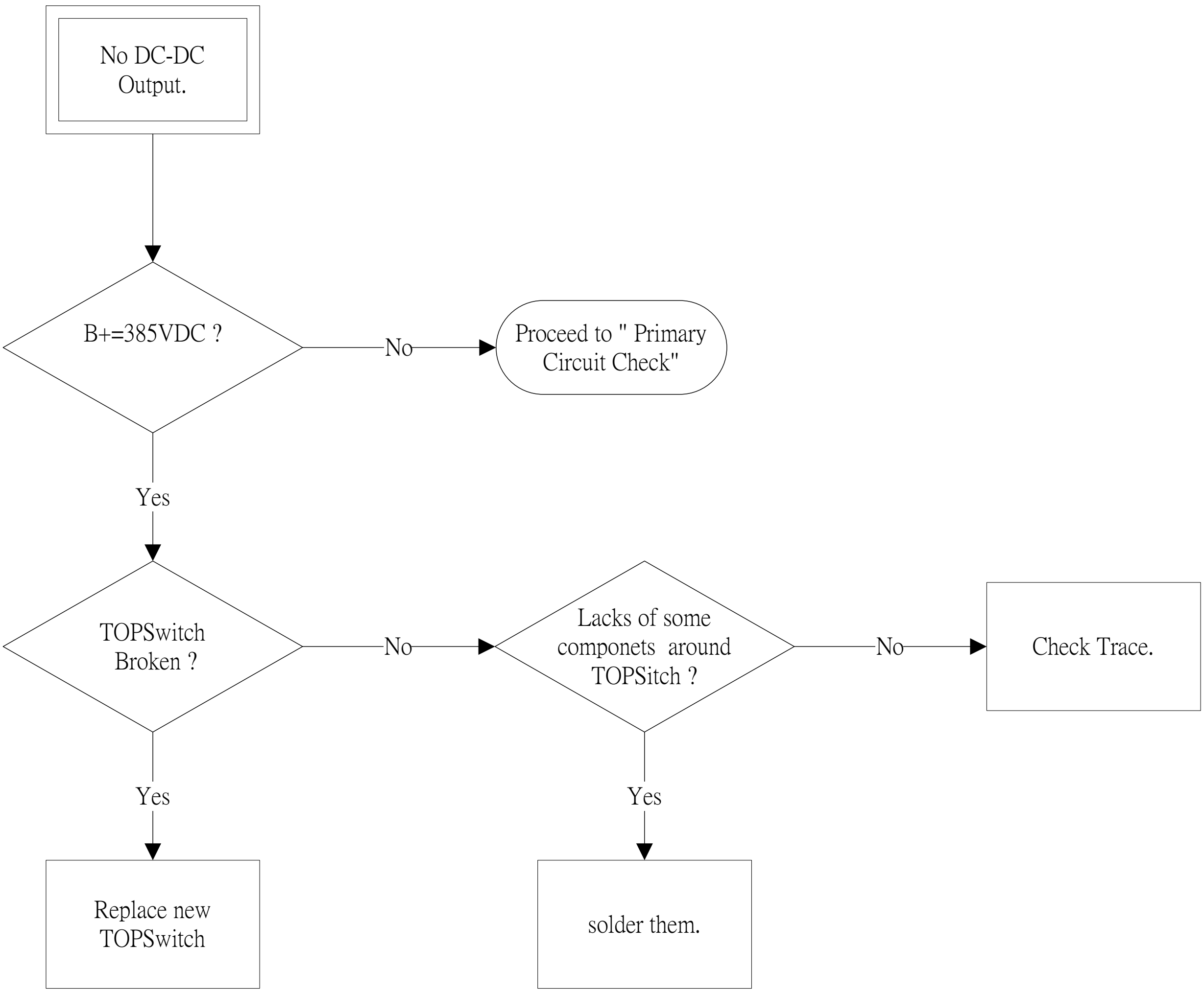

A
No
Image NG?
(Raindrops)
Yes
1. Check color wheel and Sensor board
2. Check DMD Chip and holder
3. Check Main BD XDRAM
4. Check Main BD DDP2230
No
Image NG?
(Blank)
Yes
1. Check Main board
2. Check color wheel and sensor board
3. Check DMD Chip board
4. Check DMD Chip and socket
No
Image NG?
(Screen flashing)
Yes
1. Check color wheel and sensor board
2. Check Main board
3. Check DMD Chip board
No
Image NG?
(Screen Dim-mish)
Yes
1. Check Main board
2. Check DMD Chip board
No
Image NG?
(Freezing)
Yes
1. Check color wheel
2. Check sensor board color index signal
3. Check main board
No
Image NG?
(Missing column bar)
Yes
1. Check DMD Chip holder
2. Check DMD Chip board
3. Check Main board
No
Image NG?
(Screen overlap)
Yes
1. Check Main BD output to DMD Chip BD Resistance soldering
2. Check Main BD output to DMD Chip BD capacitor soldering

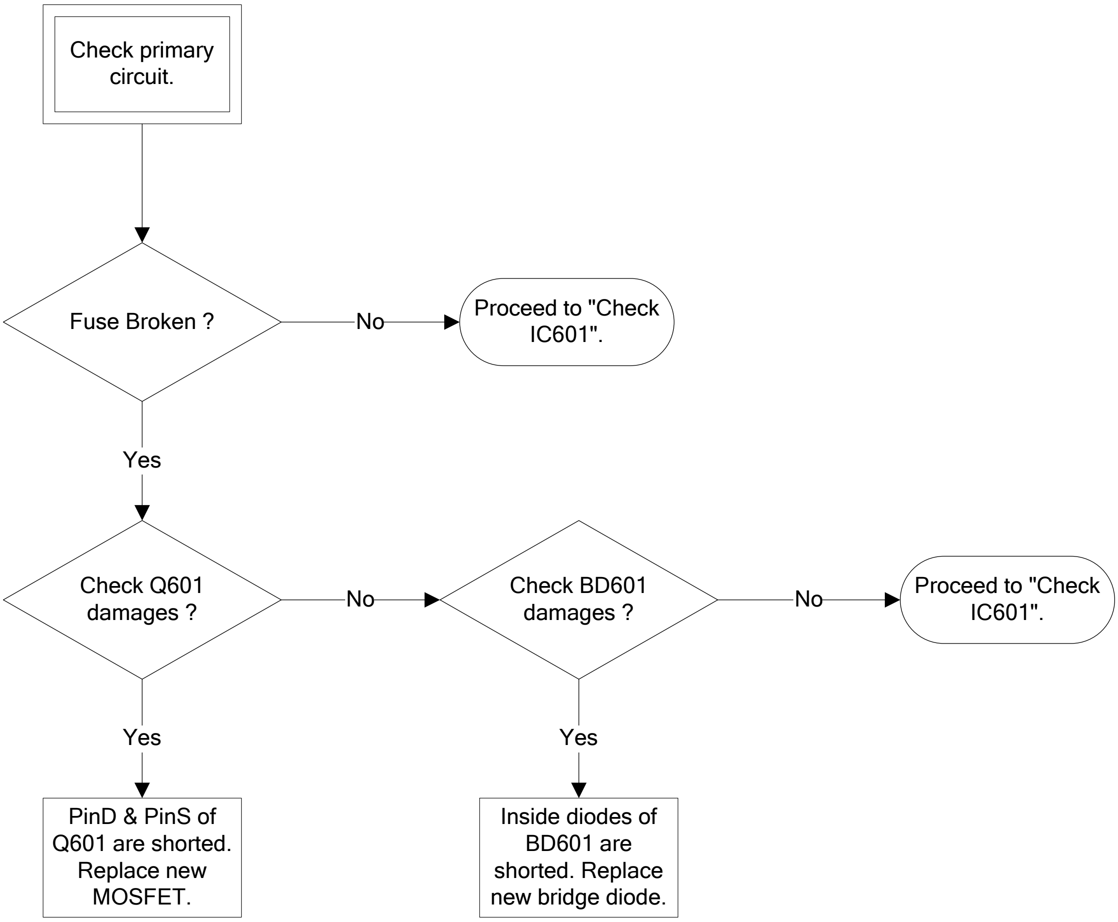
2. Error Message

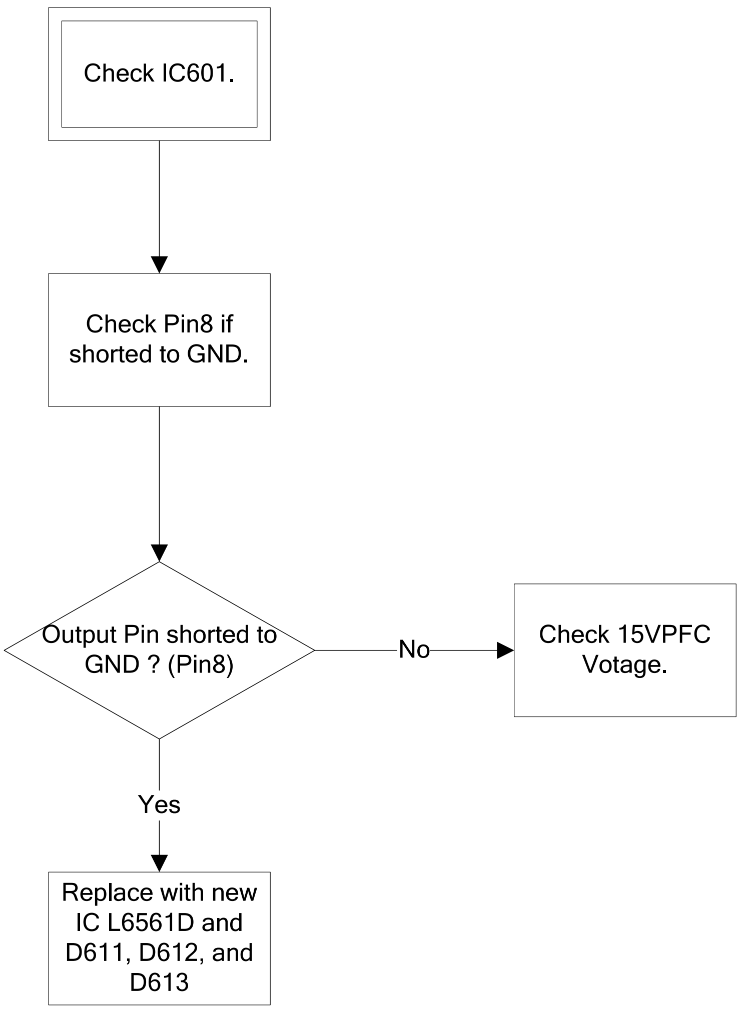
Power	Temp	Lamp	Status	Note
O	-	-	Stand-by	
G	-	-	Powering up	
G	-	-	Normal operation	
O	-	-	Normal power-down cooling	
O	-	-	First Lamp-Lit error cooling	
Lamp Error Messages				
O	-	R	Second Lamp-Lit error	
-	-	R	Lamp error in normal operation	
Thermal Error Messages				
-	R	-	Fan 1 error (the actual fan speed is ±20% outside the desired speed.)	Lamp Fan
-	R	R	Fan 2 error (the actual fan speed is ±20% outside the desired speed.)	Ballast Fan
-	R	G	Fan 3 error (the actual fan speed is ±20% outside the desired speed.)	Blower Fan
R	R	R	Thermal Sensor 1 open error (the remote diode has an open-circuit condition.)	DMD sensor
R	R	G	Thermal Sensor 2 open error (the remote diode has an open-circuit condition.)	
G	R	R	Thermal Sensor 1 short error (the remote diode has an short-circuit condition.)	DMD sensor
G	R	G	Thermal Sensor 2 short error (the remote diode has an short-circuit condition.)	
O	R	R	Temperature 1 error (over limited temperature)	DMD sensor
O	R	G	Temperature 2 error (over limited temperature)	
-	G	R	Fan IC #1 I2C Connection error	GMT 793

3. Power Trouble Shooting Guide






Check primary circuit.
Fuse Broken ?
No
Proceed to "Check IC601".
Yes
Check Q601 damages ?
No
Check BD601 damages ?
No
Proceed to "Check IC601".
Yes
Yes
PinD & PinS of Q601 are shorted. Replace new MOSFET.
Inside diodes of BD601 are shorted. Replace new bridge diode.

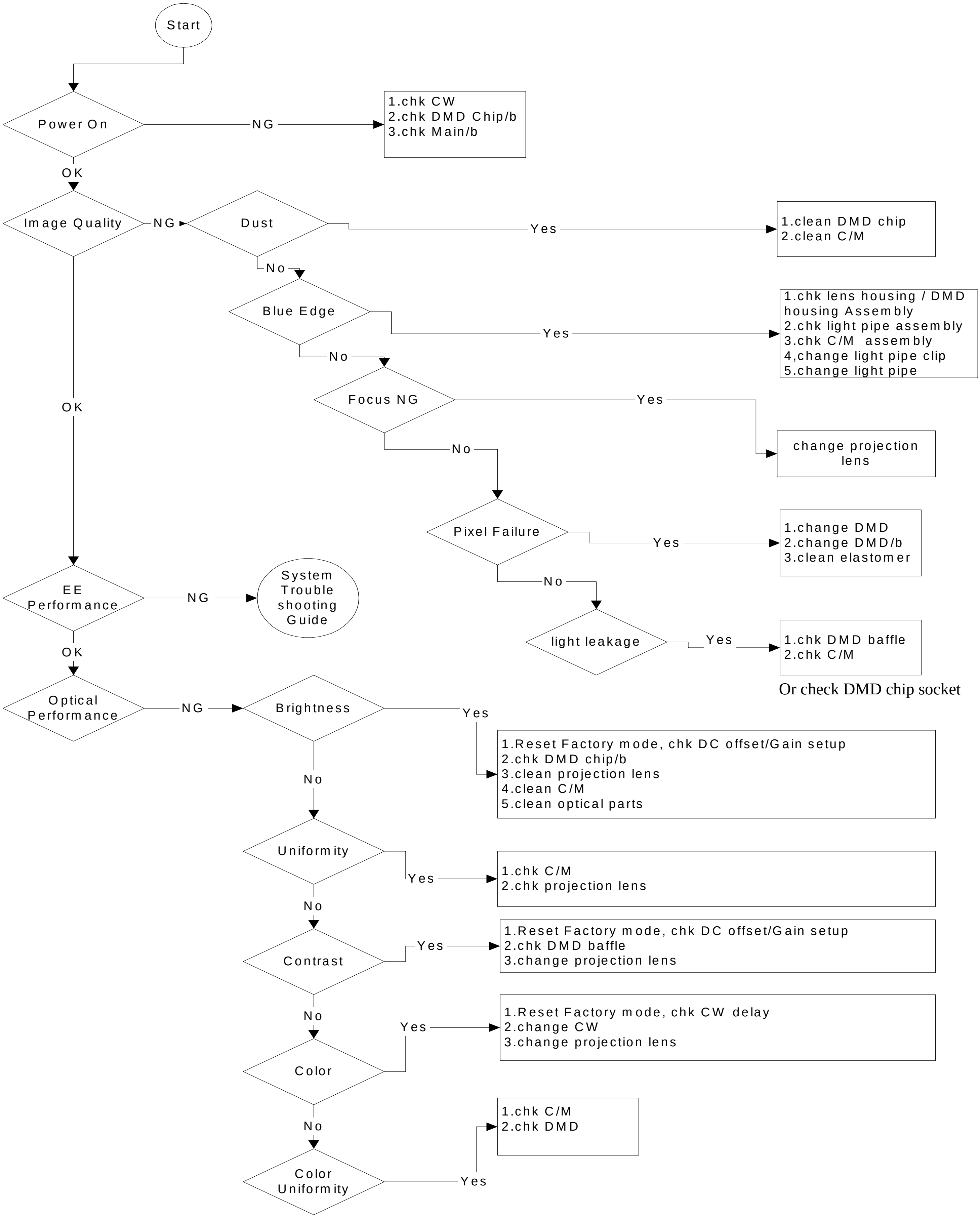

Check IC601.
Check Pin8 if shorted to GND.
Output Pin shorted to GND ? (Pin8)
No
Check 15VPFC Votage.
Yes
Replace with new IC L6561D and D611, D612, and D613

4. Optical & Optical Engine Trouble Shooting Guide

4-1 Optical Trouble Shooting Guide

No.	Item	Trouble Shooting Guide
1	Brightness	1. Change lamp
2	Uniformity	1. Change lamp
3	FOFO Contrast	1. Check ADC calibration 2. Check user's menu brightness & contrast are default 3. Clean DMD 4. Clean PL 5. Check ILL stop assy
4	ANSI Contrast	1. Clean PL 2. Clean DMD 3. Change PL
5	Color	1. Check color wheel delay 2. Check CW 50% point. Replace CW if necessary
6	Color Uniformity	1. Change lamp
7	Blue Edge	1. Refer to Item#2-1 (attached below) 2. Change CM 3. Change SUB HSG
8	Blue/Purple Border	1. Refer to Item#2-1(attached below) 2. Change CM 3. Change SUB HSG
9	Focus	1. Change Projection Lens 2. Check PL datum and DMD parallel
10	Dust	Clean DMD
11	Horizontal/Vertical Strips	1. Check connector between chipBD and MainBD 2. Re-install DMD with chipBD 3. Check if any pin of C-Spring is missing, damaged or dirty 4. Change new ChipBD/C-Spring 5. Change new DMD
12	Pixel Fail	Change new DMD

4-2 Engine Assembly Trouble Shooting Guide



4-3 “Blue Edge” Trouble Shooting:

I. Re-adjust “Overfill” first.

For Overfill Re-adjustment:

i. Those 2 Adjustment Screws must be released for around 2 mm first.

ii. Alignment Sequence:

a.To adjust “Horizontal Adjustment Screw” firstly, then “Vertical Adjustment Screw¡¨.

b. Refer to Figure 1-1..

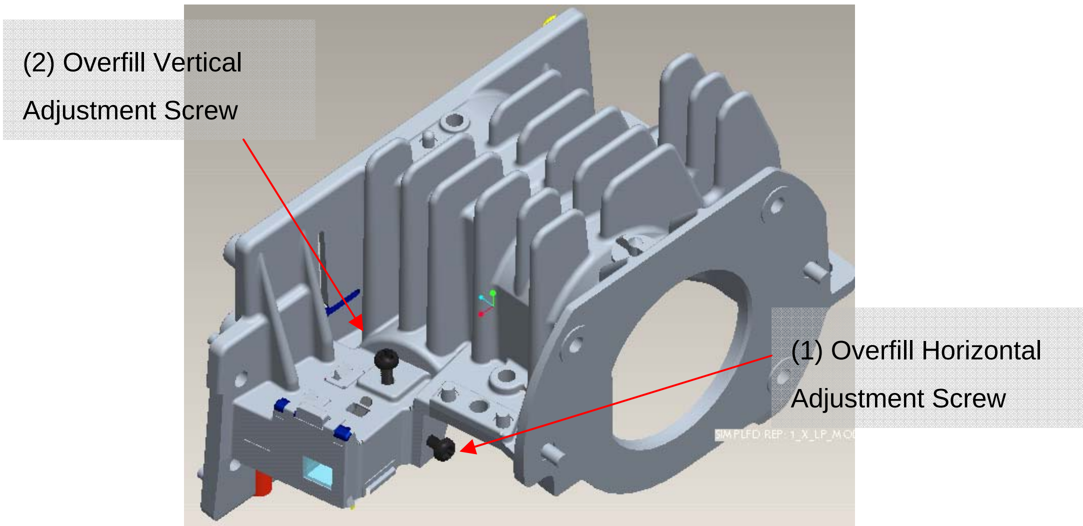


Fig. 1-1

II. Re-assemble LP module—include LP, LP Baffle, LP clip.

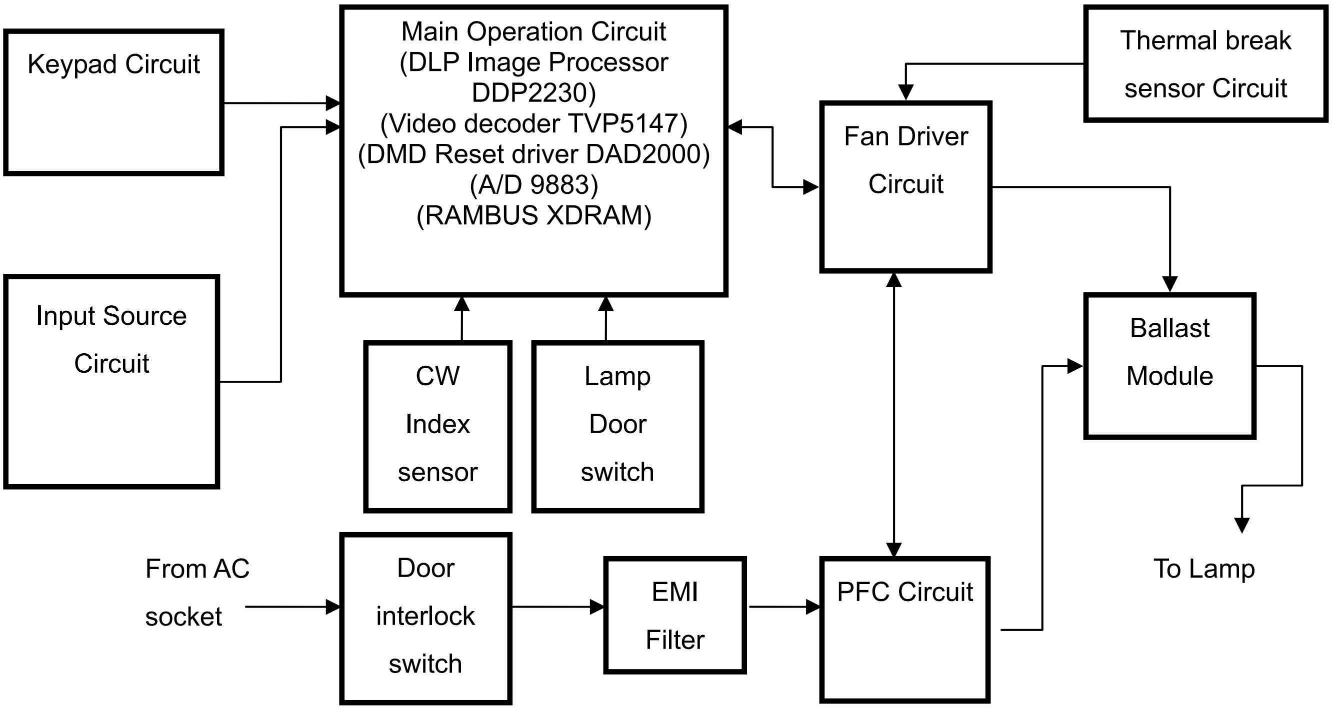
7. Block Diagram

Hardware Architecture

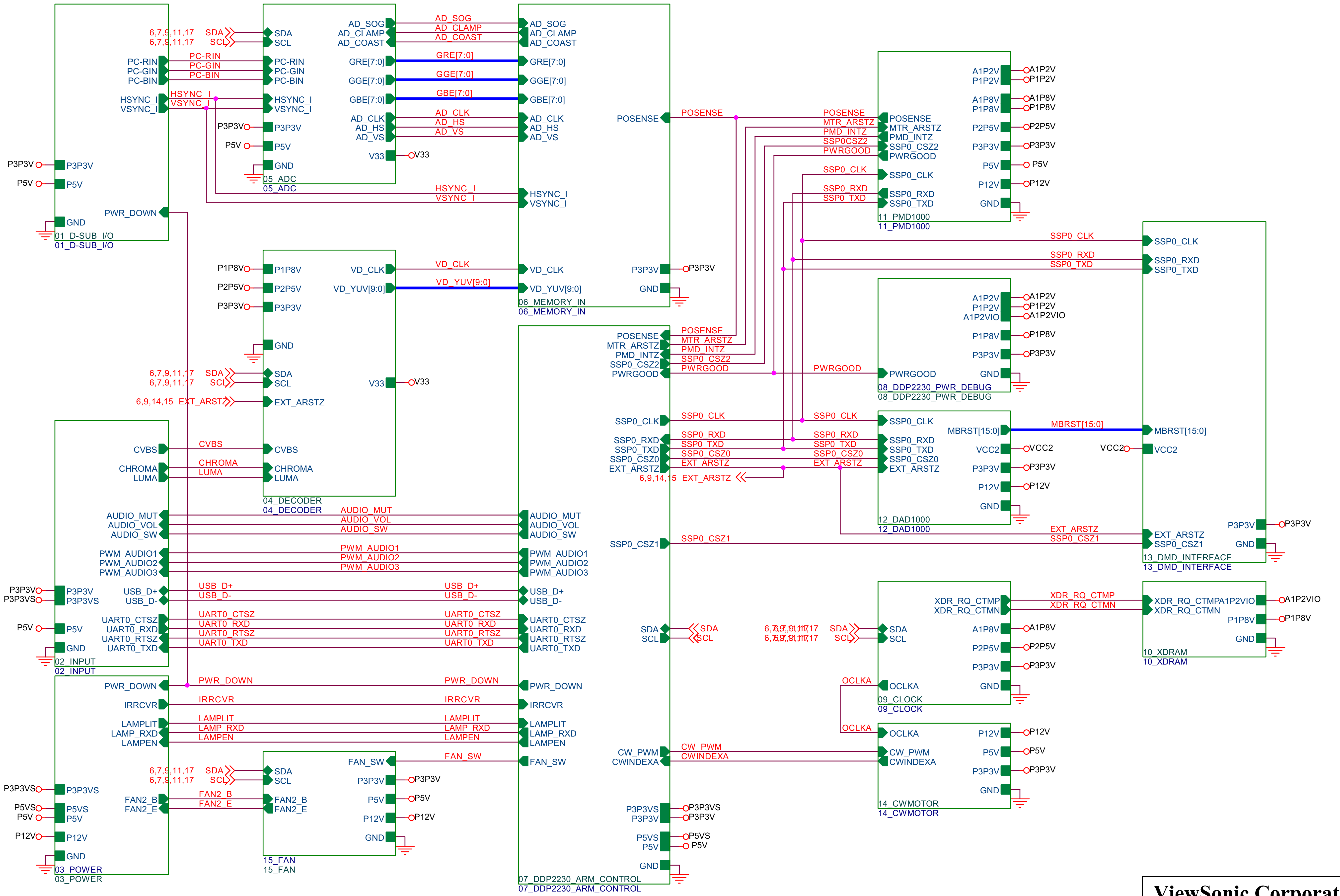
The Projector consists of the Source board, Main board, Keypad board, Fan board, EMI board, PFC board, Ballast board, Door interlock switch, Color wheel index sensor board, and the Thermal break sensor board. Please see Figure 1.

Source Board consists of audio phone jack, video RCA jack, S-video mini-DIN head, and USB head. Main Board consists of RGB A/D conversion, Video decoder, DLP ASIC, Flash and RAM, Motor driver, DMD Reset driver DAD2000, and IR receiver. Keypad Board consists of 8 keypads and 3 twice-color LEDs. Fan Board consists of DC/DC converter, Thermal Break circuit, Blower Fan driver circuit, Rear Fan driver circuit, and the temperature sensing circuit. Power supply circuit consists of AC line EMI filter, Power Factor Correction circuit. Ballast Board consists of Lamp synchronization circuit, Lamp lit feedback circuit, and Lamp power control circuit.

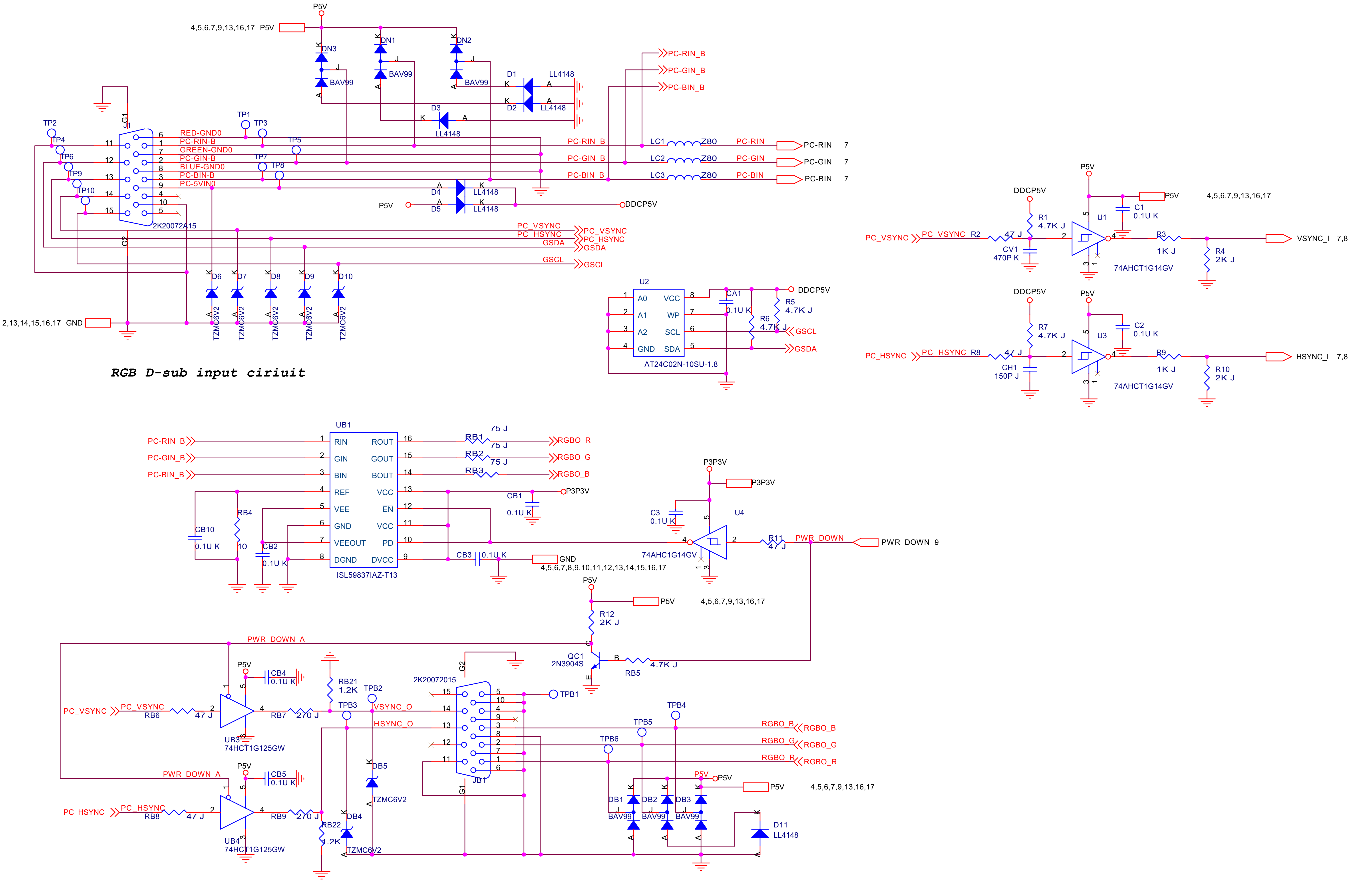
Hardware Architecture



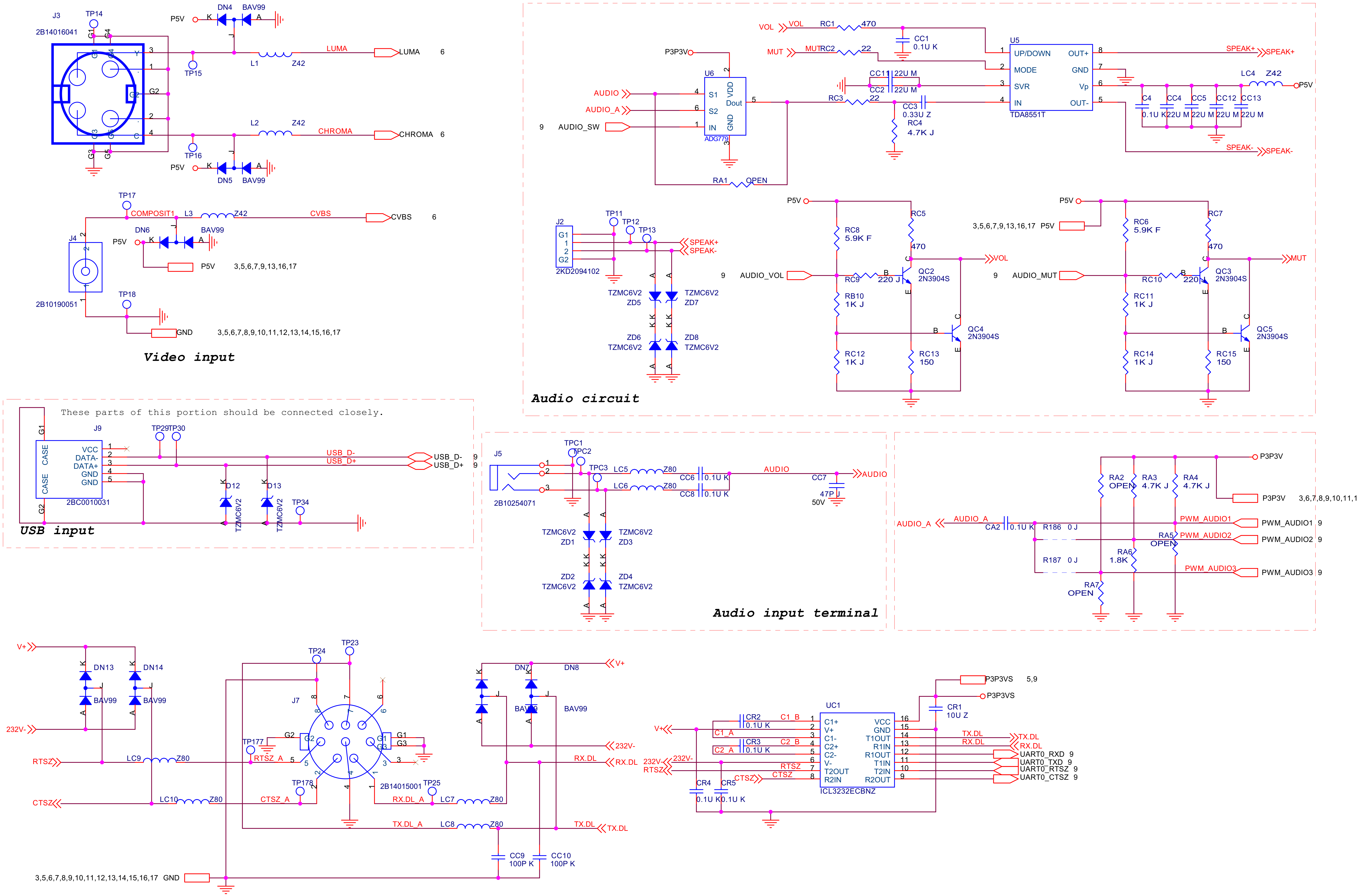
8. Schematic Diagrams



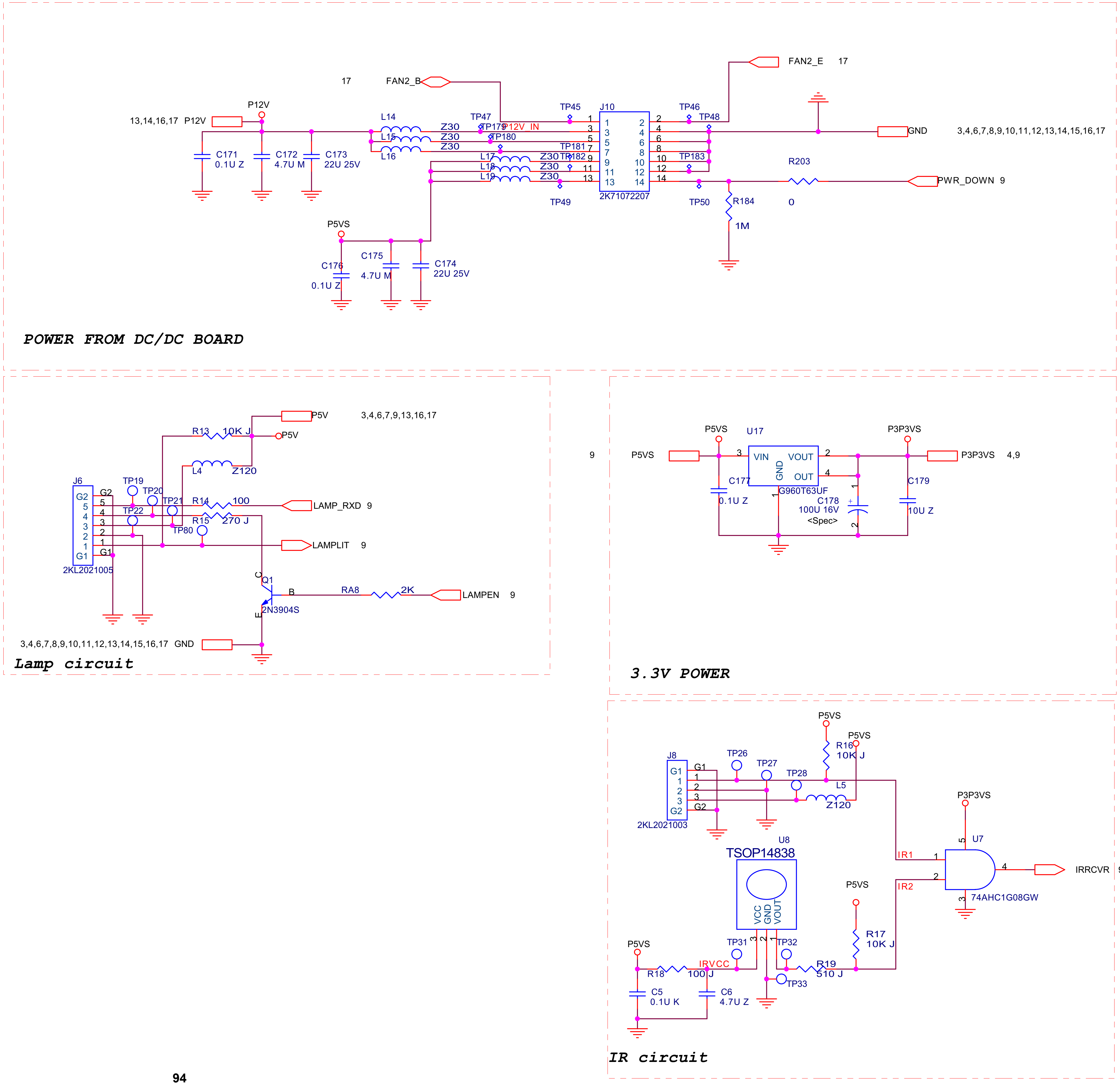
ViewSonic Corporation		
Model		
Title	MAIN BOARD	
Date		Rev:

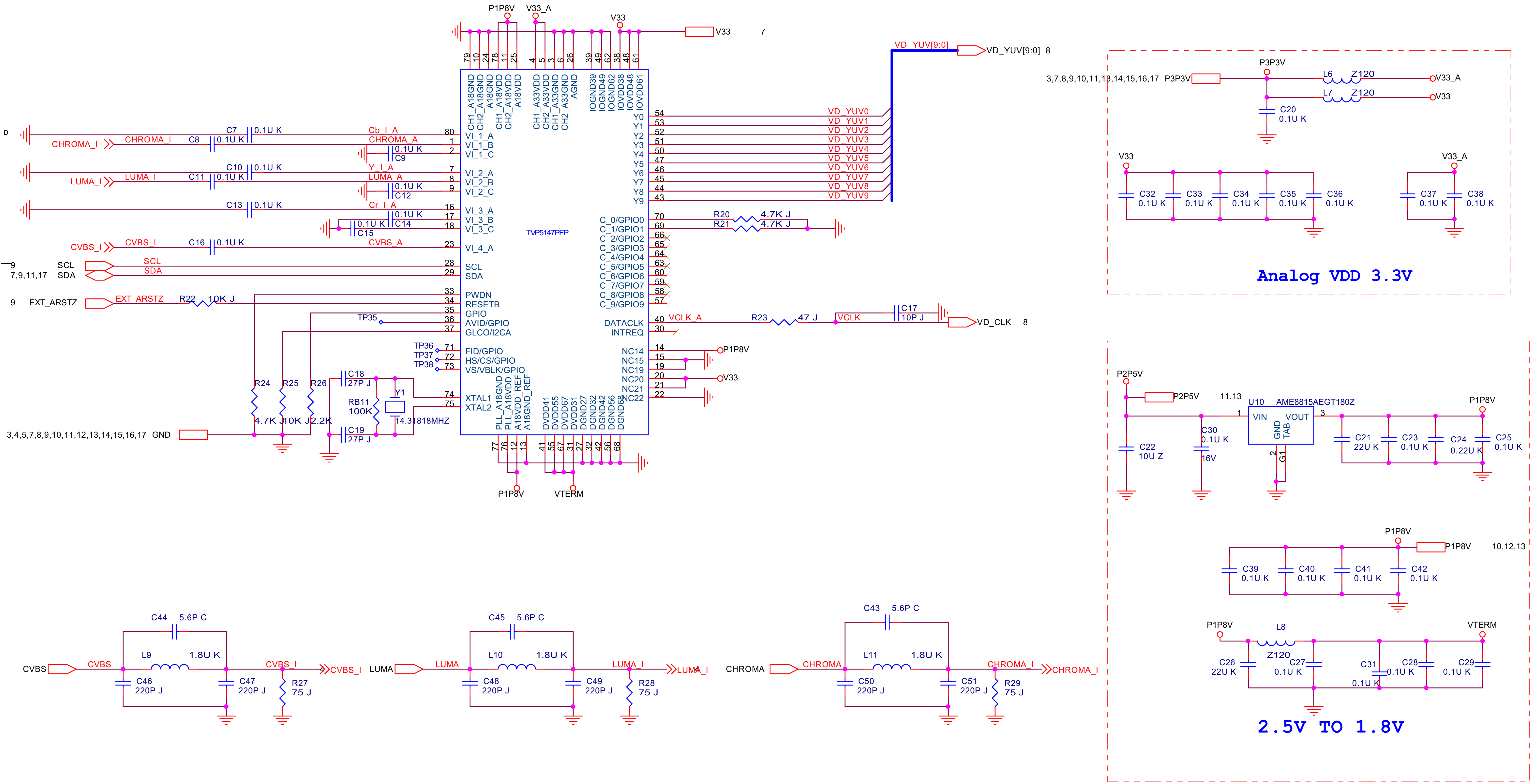


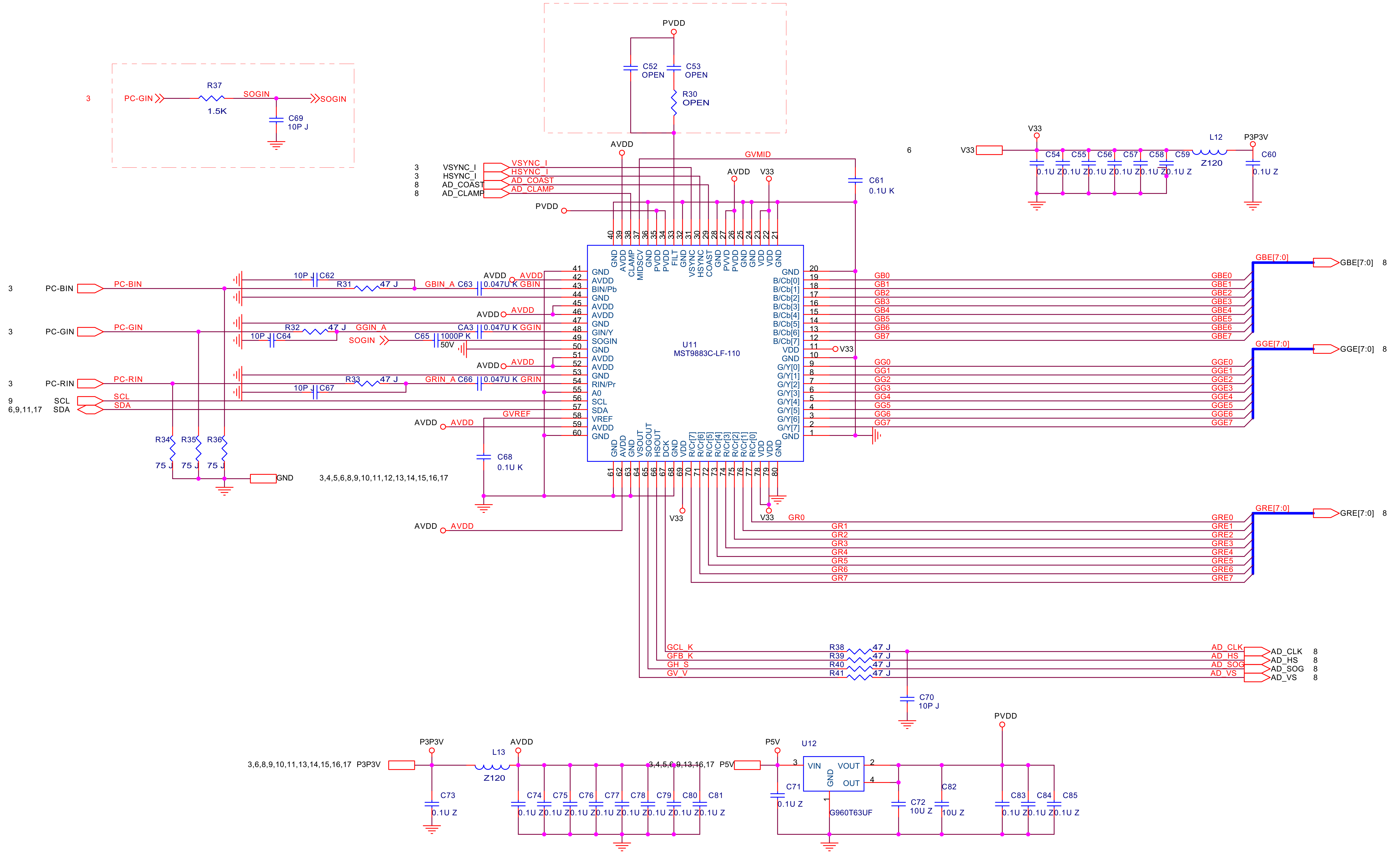
RGB D-sub input ciriuit
RGB D-sub output ciriuit



Video input
J3
2B14016041
TP14
P5V
DN4
BAV99
LUMA
L1
Z42
TP15
L2
CHROMA
TP16
DN5
TP17
COMPOSIT1
L3
CVBS
J4
DN6
2B10190051
TP18
GND
3,5,6,7,9,13,16,17
3,5,6,7,8,9,10,11,12,13,14,15,16,17
Audio circuit
VOL
RC1
470
CC1
0.1U K
MUT
RC2
22
P3P3V
U5
UP/DOWN
MODE
SVR
IN
OUT+
GND
Vp
OUT-
TDA8551T
SPEAK+
SPEAK-
LC4
U6
VDD
Dout
GND
S1
S2
IN
ADG779
AUDIO
AUDIO_A
AUDIO_SW
CC11
CC2
22U M
RC3
CC3
0.33U Z
RC4
4.7K J
RA1
OPEN
C4
CC4
CC5
CC12
CC13
J2
2KD2094102
TP11
TP12
TP13
TZMC6V2
ZD5
ZD6
ZD7
ZD8
AUDIO_VOL
AUDIO_MUT
RC8
5.9K F
RC5
QC2
2N3904S
RC9
220 J
RB10
1K J
QC4
RC12
RC13
150
RC6
RC7
RC10
QC3
RC11
QC5
RC14
RC15
These parts of this portion should be connected closely.
USB input
J9
CASE
VCC
DATA-
DATA+
2BC0010031
TP29
TP30
USB_D-
USB_D+
D12
D13
TP34
Audio input terminal
J5
2B10254071
TPC1
TPC2
TPC3
LC5
LC6
Z80
CC6
CC8
0.1U K
CC7
47P J
50V
ZD1
ZD2
ZD3
ZD4
RA2
RA3
RA4
OPEN
4.7K J
P3P3V
3,6,7,8,9,10,11,1
CA2
R186
0 J
R187
RA5
RA6
1.8K
RA7
PWM_AUDIO1
PWM_AUDIO2
PWM_AUDIO3
RS232 circuit
V+
232V-
RTSZ
CTSZ
DN13
DN14
DN7
DN8
LC9
LC10
TP23
TP24
J7
TP177
TP178
RTSZ_A
CTSZ_A
2B14015001
TP25
RX.DL
RX.DL_A
TX.DL
TX.DL_A
LC7
LC8
CC9
CC10
100P K
UC1
C1+
C1-
C2+
C2-
V-
T2OUT
R2IN
T1OUT
R1IN
R1OUT
T1IN
T2IN
R2OUT
ICL3232ECBNZ
CR1
10U Z
CR2
CR3
CR4
CR5
C1_B
C1_A
C2_B
C2_A
P3P3VS
5,9
UART0_RXD
UART0_TXD
UART0_RTSZ
UART0_CTSZ


POWER FROM DC/DC BOARD
FAN2_B
FAN2_E 17
P12V
13,14,16,17 P12V
C171 0.1U Z
C172 4.7U M
C173 22U 25V
L14
L15
L16
Z30
L17
L18
L19
TP45
TP46
TP47
TP48
TP49
TP50
TP179
P12V_IN
TP180
TP181
TP182
TP183
J10
2K71072207
GND
3,4,6,7,8,9,10,11,12,13,14,15,16,17
R203
PWR_DOWN 9
R184
1M
P5VS
C174 22U 25V
C175 4.7U M
C176 0.1U Z
Lamp circuit
P5V
3,4,6,7,9,13,16,17
R13 10K J
L4 Z120
J6
2KL2021005
TP19
TP20
TP21
TP22
TP80
R14 100
R15 270 J
LAMP_RXD 9
LAMPLIT 9
Q1
2N3904S
RA8 2K
LAMPEN 9
3,4,6,7,8,9,10,11,12,13,14,15,16,17 GND
3.3V POWER
U17
VIN
VOUT
GND
OUT
G960T63UF
C177 0.1U Z
C178 100U 16V <Spec>
C179 10U Z
P3P3VS
P3P3VS 4,9
IR circuit
J8
2KL2021003
TP26
TP27
TP28
TP31
TP32
TP33
R16 10K J
L5 Z120
U8
TSOP14838
VCC
GND
VOUT
IR1
IR2
U7
74AHC1G08GW
IRRCVR 9
R17 10K J
R18 100 J
R19 510 J
IRVCC
C5 0.1U K
C6 4.7U Z

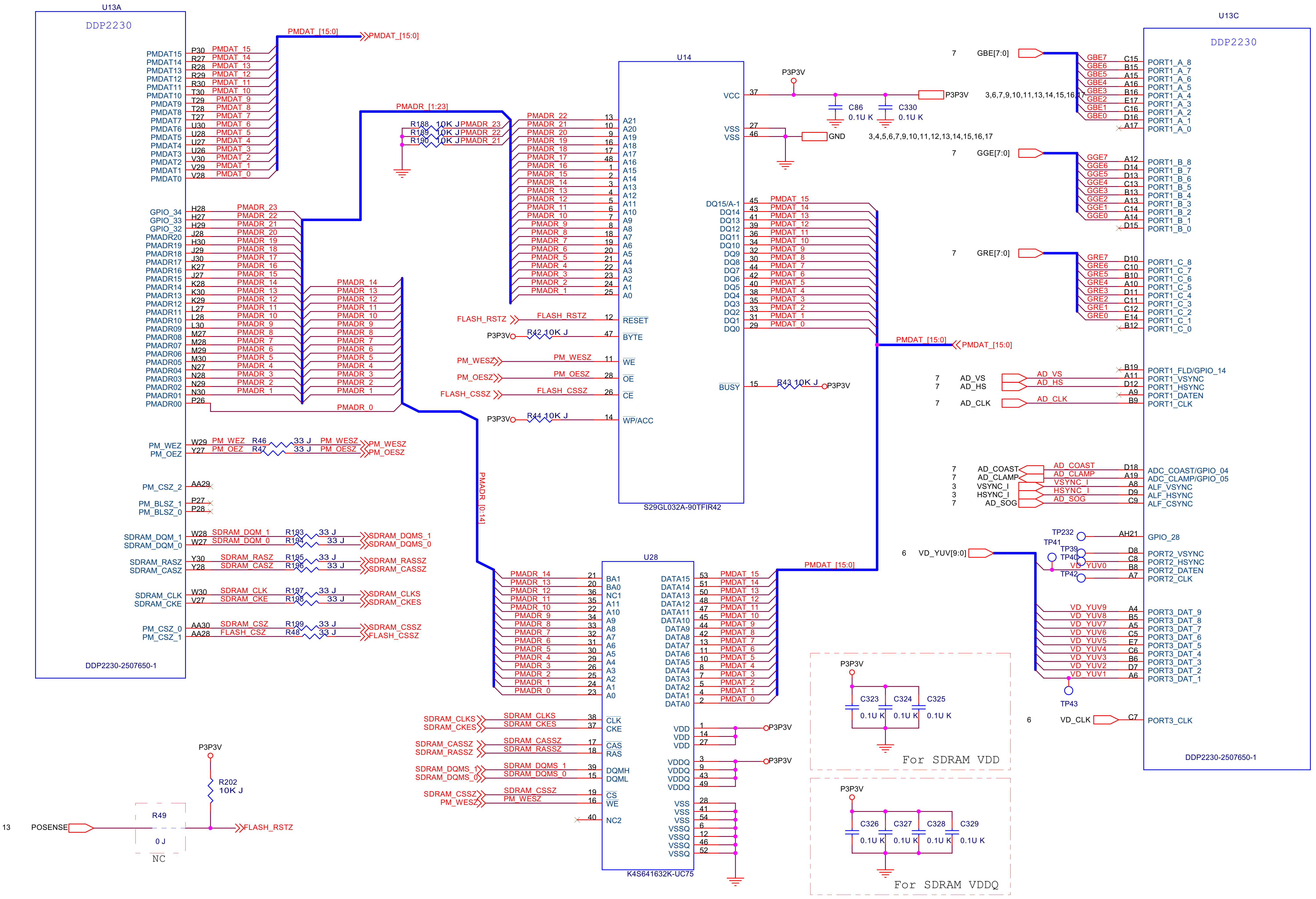

TVP5147PFP
Analog VDD 3.3V
2.5V TO 1.8V
AME8815AEGT180Z
VD_YUV[9:0]
VD_CLK
CVBS
LUMA
CHROMA
CVBS_I
LUMA_I
CHROMA_I
SCL
SDA
EXT_ARSTZ
GND
14.31818MHZ

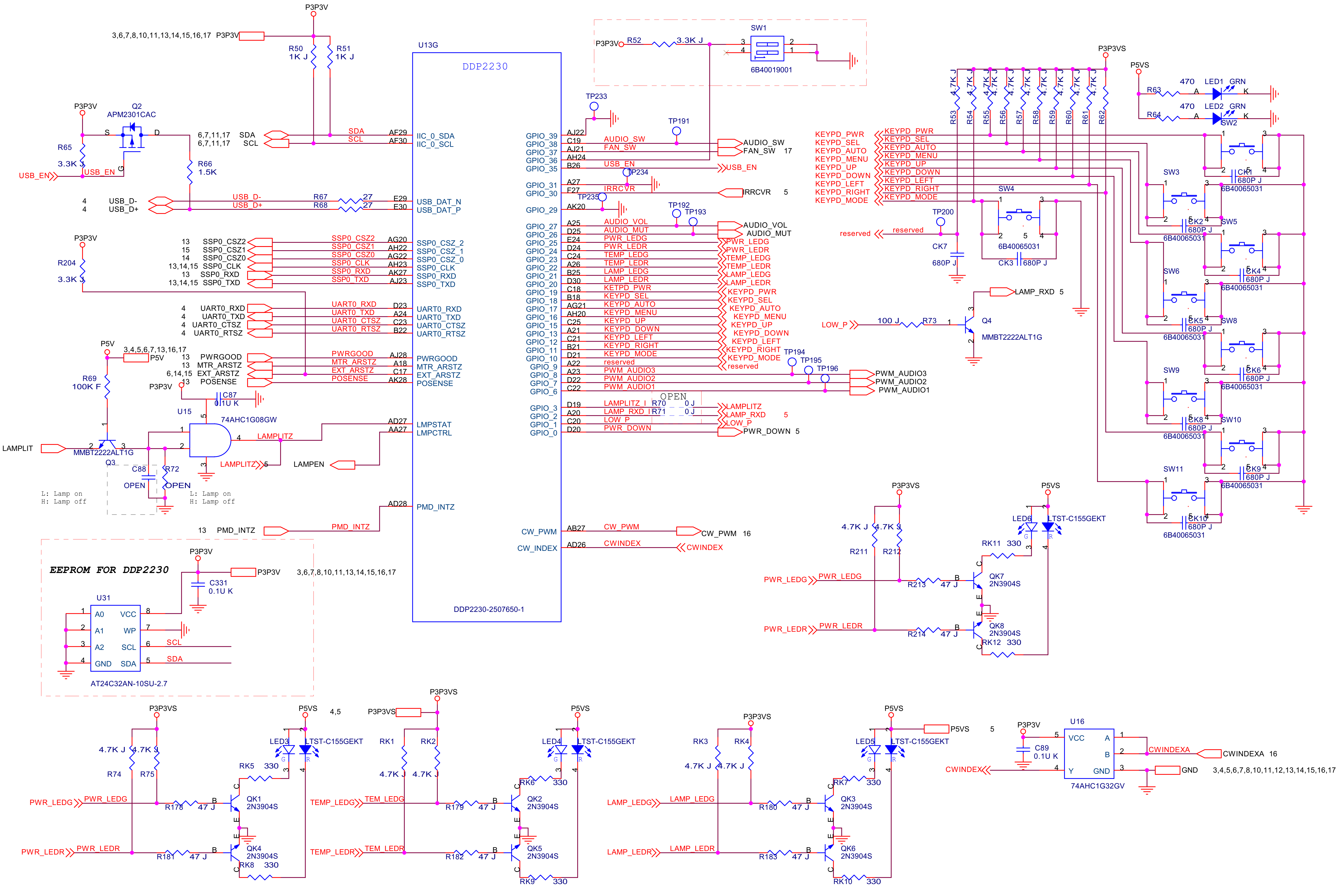


ViewSonic Corporation

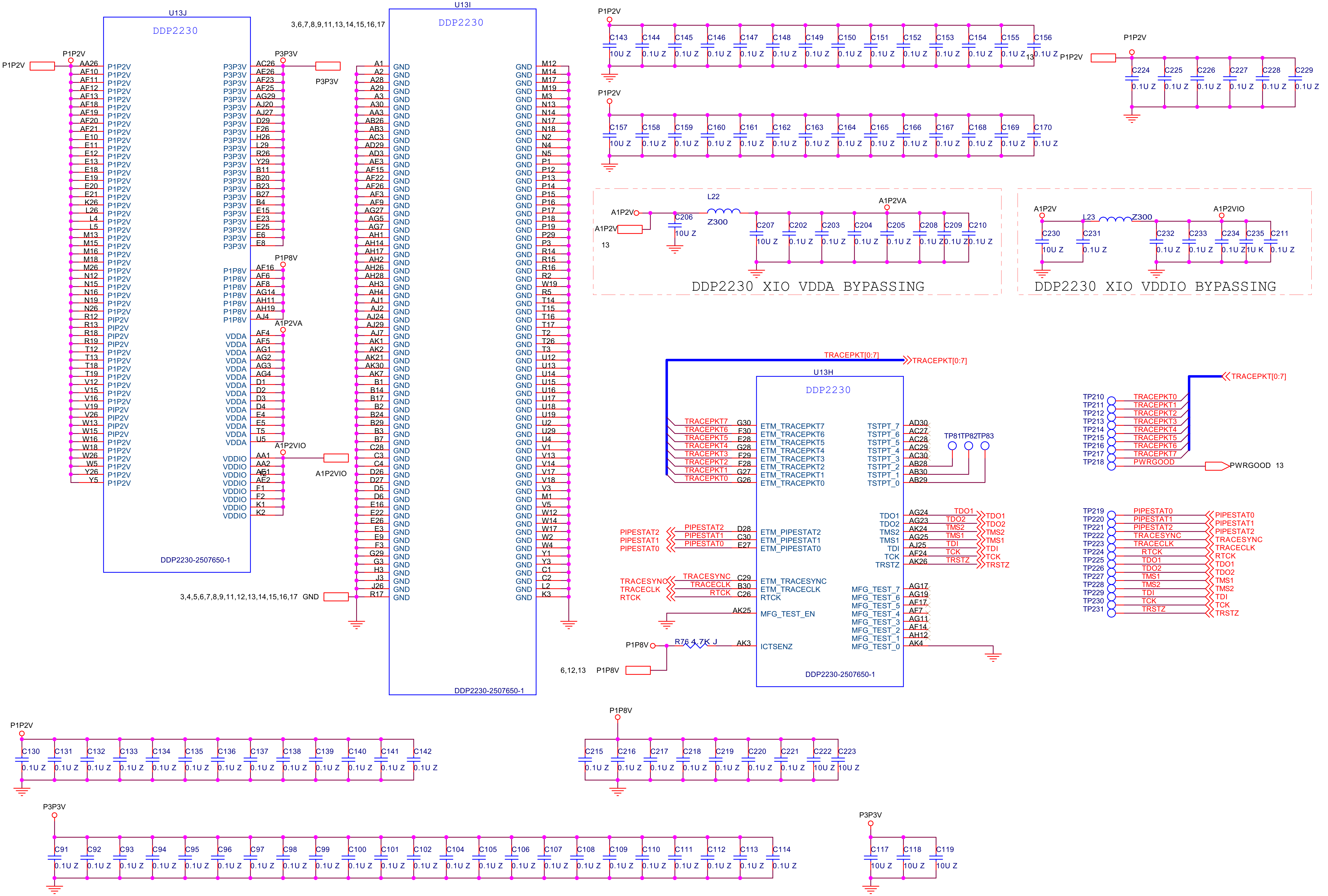
Confidential - Do Not Copy

PJ513D-1



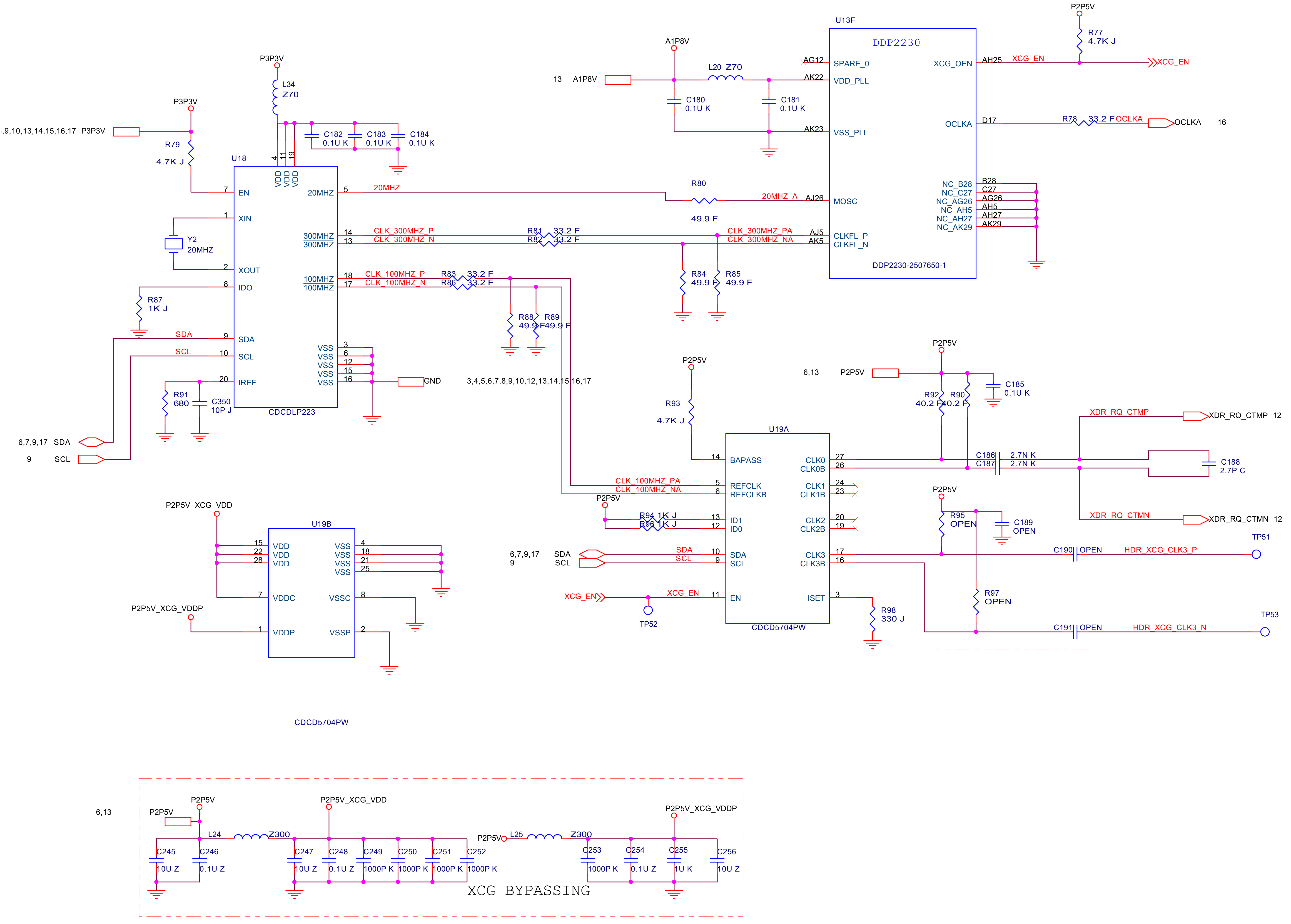


Keypad and LED circuit

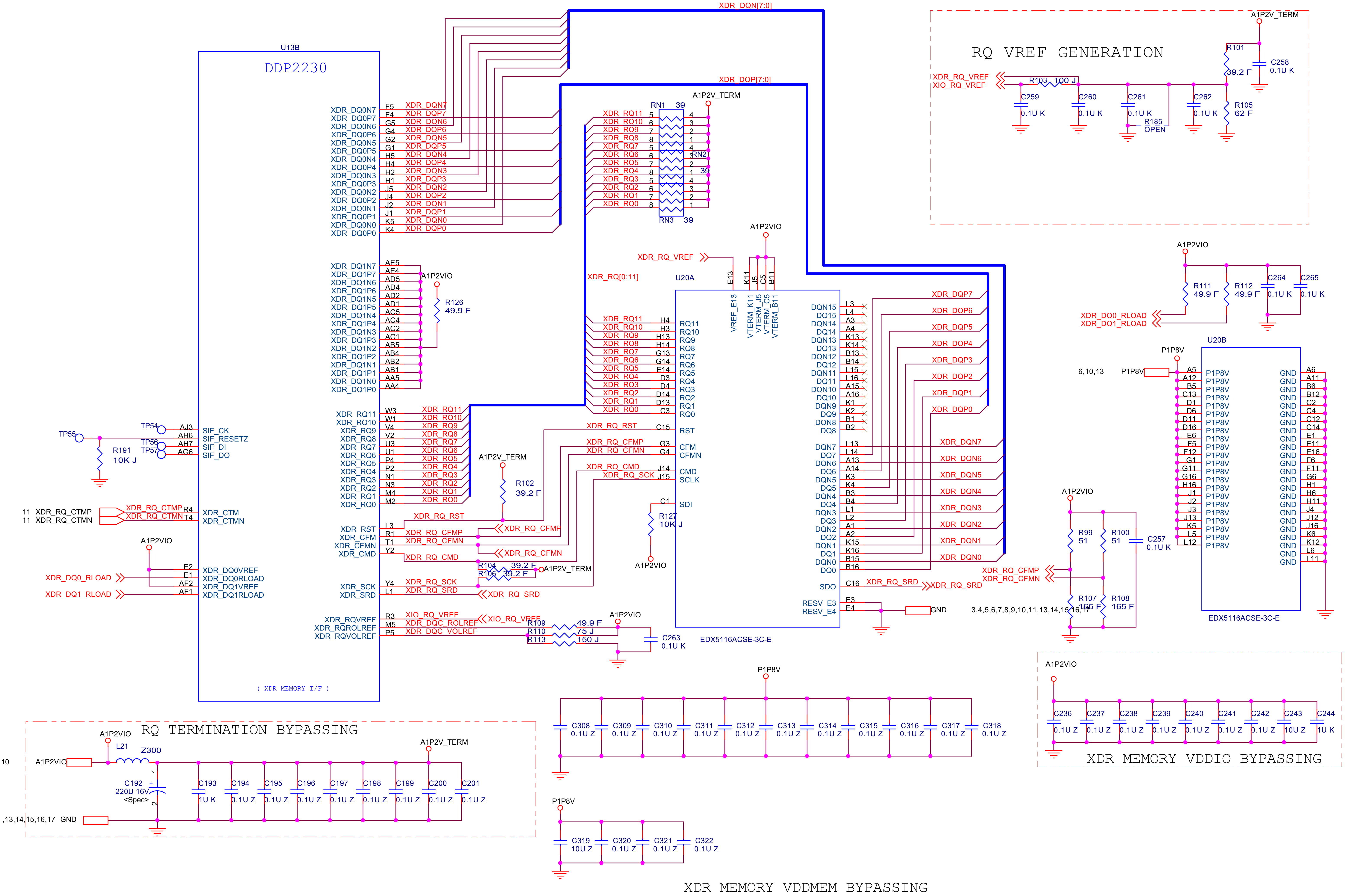


U13J
DDP2230
DDP2230-2507650-1
U13I
DDP2230
DDP2230-2507650-1
U13H
DDP2230
DDP2230-2507650-1
P1P2V
P3P3V
P1P8V
A1P2VA
A1P2VIO
A1P2V
GND
3,6,7,8,9,11,13,14,15,16,17
3,4,5,6,7,8,9,11,12,13,14,15,16,17
6,12,13
L22
Z300
L23
R76 4.7K J
DDP2230 XIO VDDA BYPASSING
DDP2230 XIO VDDIO BYPASSING
TRACEPKT[0:7]
PWRGOOD 13
ETM_TRACEPKT7
ETM_TRACEPKT6
ETM_TRACEPKT5
ETM_TRACEPKT4
ETM_TRACEPKT3
ETM_TRACEPKT2
ETM_TRACEPKT1
ETM_TRACEPKT0
ETM_PIPESTAT2
ETM_PIPESTAT1
ETM_PIPESTAT0
ETM_TRACESYNC
ETM_TRACECLK
RTCK
MFG_TEST_EN
ICTSENZ
TSTPT_7
TSTPT_6
TSTPT_5
TSTPT_4
TSTPT_3
TSTPT_2
TSTPT_1
TSTPT_0
TDO1
TDO2
TMS2
TMS1
TDI
TCK
TRSTZ
MFG_TEST_7
MFG_TEST_6
MFG_TEST_5
MFG_TEST_4
MFG_TEST_3
MFG_TEST_2
MFG_TEST_1
MFG_TEST_0

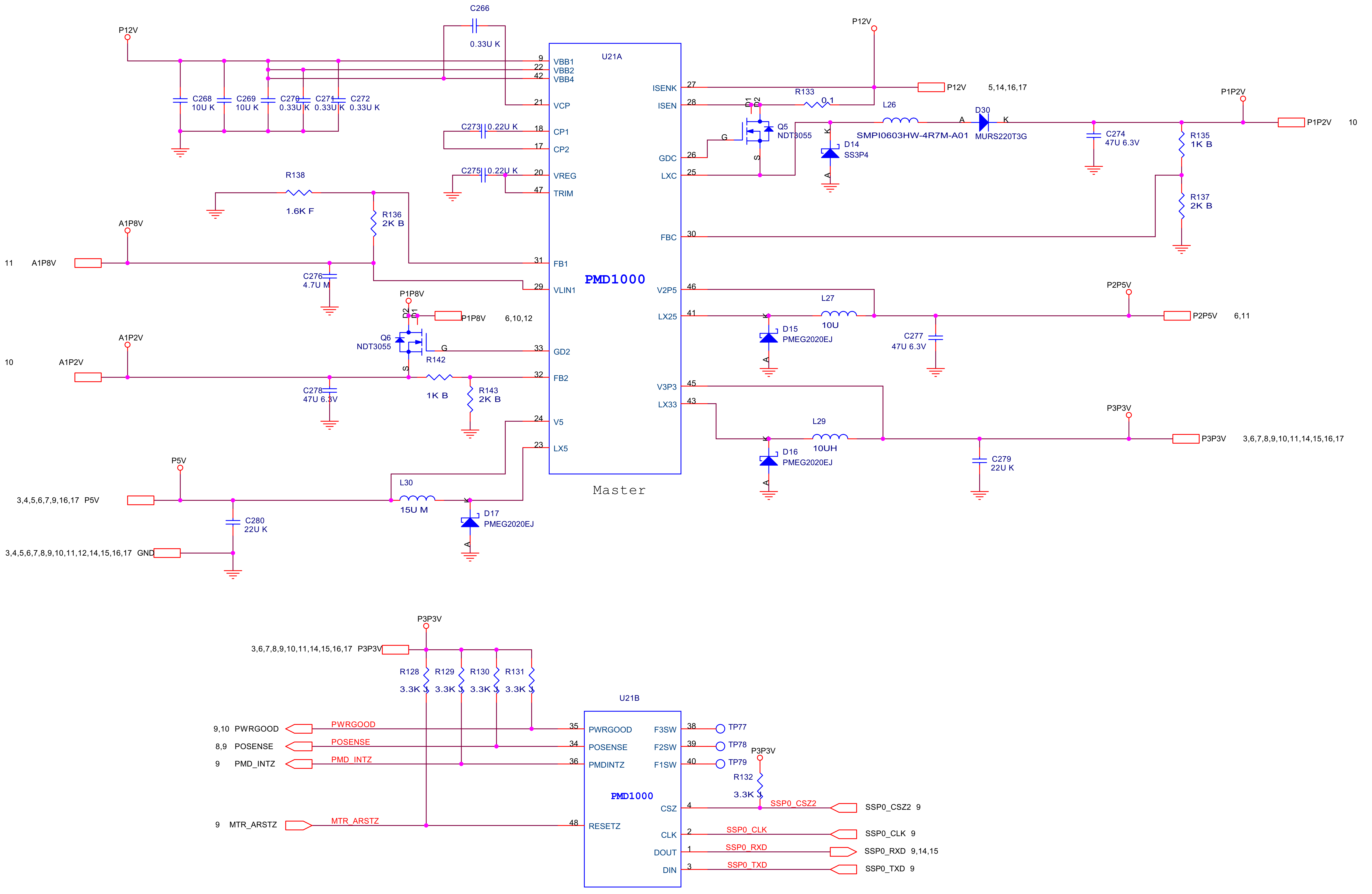
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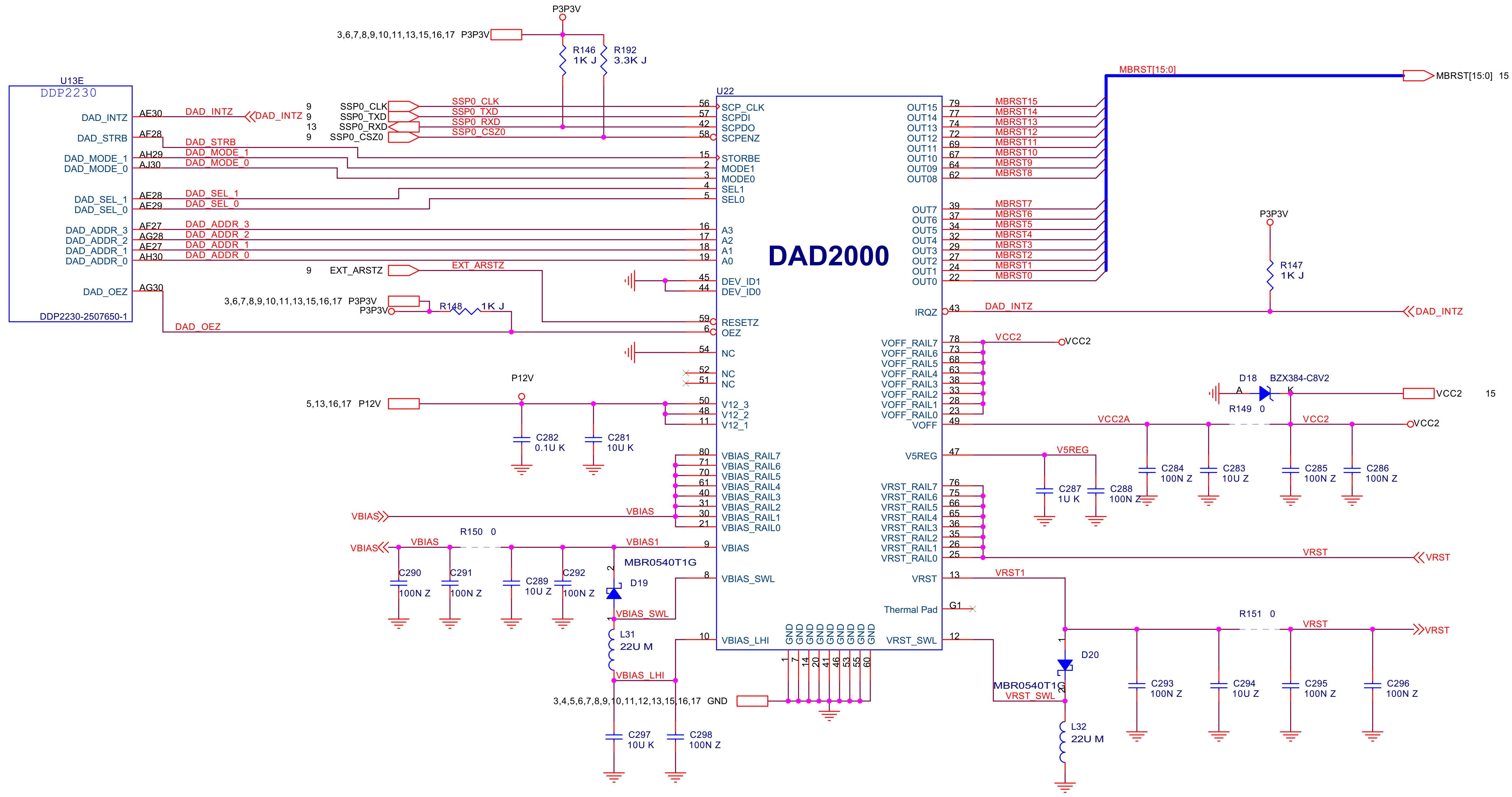


U13F
DDP2230
SPARE_0
VDD_PLL
VSS_PLL
MOSC
CLKFL_P
CLKFL_N
XCG_OEN
OCLKA
NC_B28
NC_C27
NC_AG26
NC_AH5
NC_AH27
NC_AK29
DDP2230-2507650-1
A1P8V
L20 Z70
C180 0.1U K
C181 0.1U K
P2P5V
R77 4.7K J
XCG_EN
R78 33.2 F
OCLKA
16
13
P3P3V
L34 Z70
C182 0.1U K
C183 0.1U K
C184 0.1U K
U18
R79 4.7K J
EN
XIN
XOUT
IDO
SDA
SCL
IREF
20MHZ
300MHZ
100MHZ
VSS
VDD
CDCDLP223
Y2 20MHZ
R87 1K J
R91 680
C350 10P J
R80 49.9 F
20MHZ_A
CLK_300MHZ_P
CLK_300MHZ_N
CLK_300MHZ_PA
CLK_300MHZ_NA
R81 33.2 F
R82 33.2 F
R84 49.9 F
R85 49.9 F
CLK_100MHZ_P
CLK_100MHZ_N
R83 33.2 F
R86 33.2 F
R88 49.9 F
R89 49.9 F
GND
3,4,5,6,7,8,9,10,12,13,14,15,16,17
6,7,9,17 SDA
9 SCL
U19A
BAPASS
REFCLK
REFCLKB
ID1
ID0
EN
CLK0
CLK0B
CLK1
CLK1B
CLK2
CLK2B
CLK3
CLK3B
ISET
CDCD5704PW
R93 4.7K J
CLK_100MHZ_PA
CLK_100MHZ_NA
R94 1K J
R96 1K J
TP52
R98 330 J
6,13 P2P5V
C185 0.1U K
R92 40.2 F
R90 40.2 F
C186 2.7N K
C187 2.7N K
C188 2.7P C
XDR_RQ_CTMP 12
XDR_RQ_CTMN 12
R95 OPEN
C189 OPEN
R97 OPEN
C190 OPEN
C191 OPEN
HDR_XCG_CLK3_P
HDR_XCG_CLK3_N
TP51
TP53
U19B
P2P5V_XCG_VDD
P2P5V_XCG_VDDP
VDD
VDDC
VDDP
VSS
VSSC
VSSP
CDCD5704PW
L24 Z300
L25 Z300
C245 10U Z
C246 0.1U Z
C247 10U Z
C248 0.1U Z
C249 1000P K
C250 1000P K
C251 1000P K
C252 1000P K
C253 1000P K
C254 0.1U Z
C255 1U K
C256 10U Z
XCG BYPASSING



RQ VREF GENERATION
DDP2230
U13B
U20A
U20B
EDX5116ACSE-3C-E
XDR_DQN[7:0]
XDR_DQP[7:0]
XDR_RQ[0:11]
A1P2V_TERM
A1P2VIO
P1P8V
XDR_RQ_VREF
XIO_RQ_VREF
XDR_DQ0_RLOAD
XDR_DQ1_RLOAD
XDR_RQ_CFMP
XDR_RQ_CFMN
XDR_RQ_SRD
XDR_RQ_CTMP
XDR_RQ_CTMN
(XDR MEMORY I/F)
RQ TERMINATION BYPASSING
XDR MEMORY VDDIO BYPASSING
XDR MEMORY VDDMEM BYPASSING

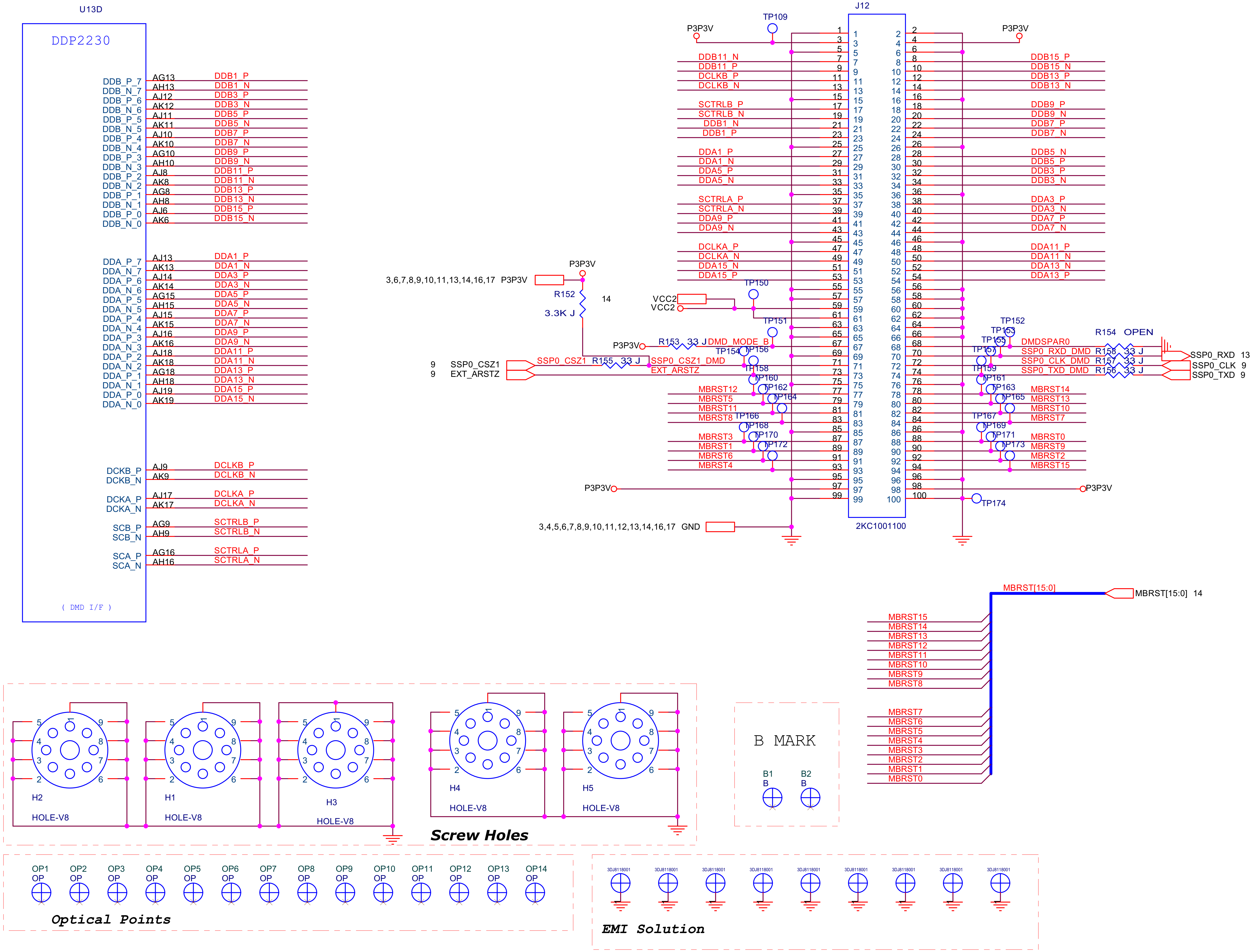

U21A
PMD1000
Master
VBB1
VBB2
VBB4
VCP
CP1
CP2
VREG
TRIM
FB1
VLIN1
GD2
FB2
V5
LX5
ISENK
ISEN
GDC
LXC
FBC
V2P5
LX25
V3P3
LX33
C266
0.33U K
P12V
C268 10U K
C269 10U K
C270 0.33U K
C271 0.33U K
C272 0.33U K
C273 0.22U K
C275 0.22U K
R138
1.6K F
R136 2K B
A1P8V
11 A1P8V
C276 4.7U M
P1P8V
P1P8V 6,10,12
Q6 NDT3055
R142
A1P2V
10 A1P2V
C278 47U 6.3V
1K B
R143 2K B
P5V
3,4,5,6,7,9,16,17 P5V
C280 22U K
3,4,5,6,7,8,9,10,11,12,14,15,16,17 GND
L30
15U M
D17 PMEG2020EJ
P12V 5,14,16,17
R133 0.1
Q5 NDT3055
L26
SMPI0603HW-4R7M-A01
D30 MURS220T3G
D14 SS3P4
C274 47U 6.3V
P1P2V
P1P2V 10
R135 1K B
R137 2K B
L27
10U
D15 PMEG2020EJ
C277 47U 6.3V
P2P5V
P2P5V 6,11
L29
10UH
D16 PMEG2020EJ
C279 22U K
P3P3V
P3P3V 3,6,7,8,9,10,11,14,15,16,17
3,6,7,8,9,10,11,14,15,16,17 P3P3V
R128 3.3K
R129 3.3K
R130 3.3K
R131 3.3K
U21B
PMD1000
PWRGOOD
POSENSE
PMDINTZ
RESETZ
F3SW
F2SW
F1SW
CSZ
CLK
DOUT
DIN
9,10 PWRGOOD
8,9 POSENSE
9 PMD_INTZ
9 MTR_ARSTZ
PWRGOOD
POSENSE
PMD_INTZ
MTR_ARSTZ
TP77
TP78
TP79
R132 3.3K
SSP0_CSZ2
SSP0_CLK
SSP0_RXD
SSP0_TXD
SSP0_CSZ2 9
SSP0_CLK 9
SSP0_RXD 9,14,15
SSP0_TXD 9

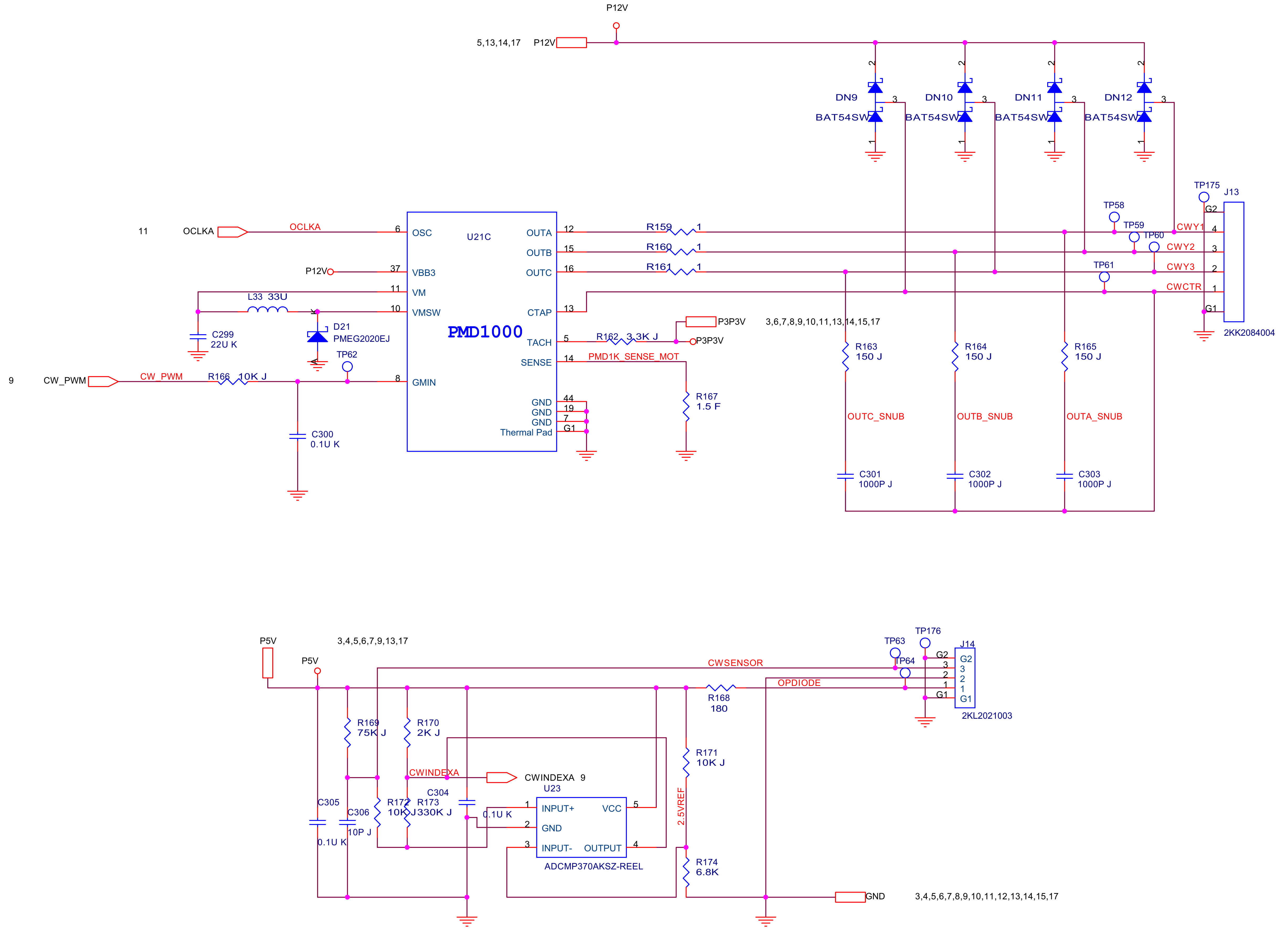


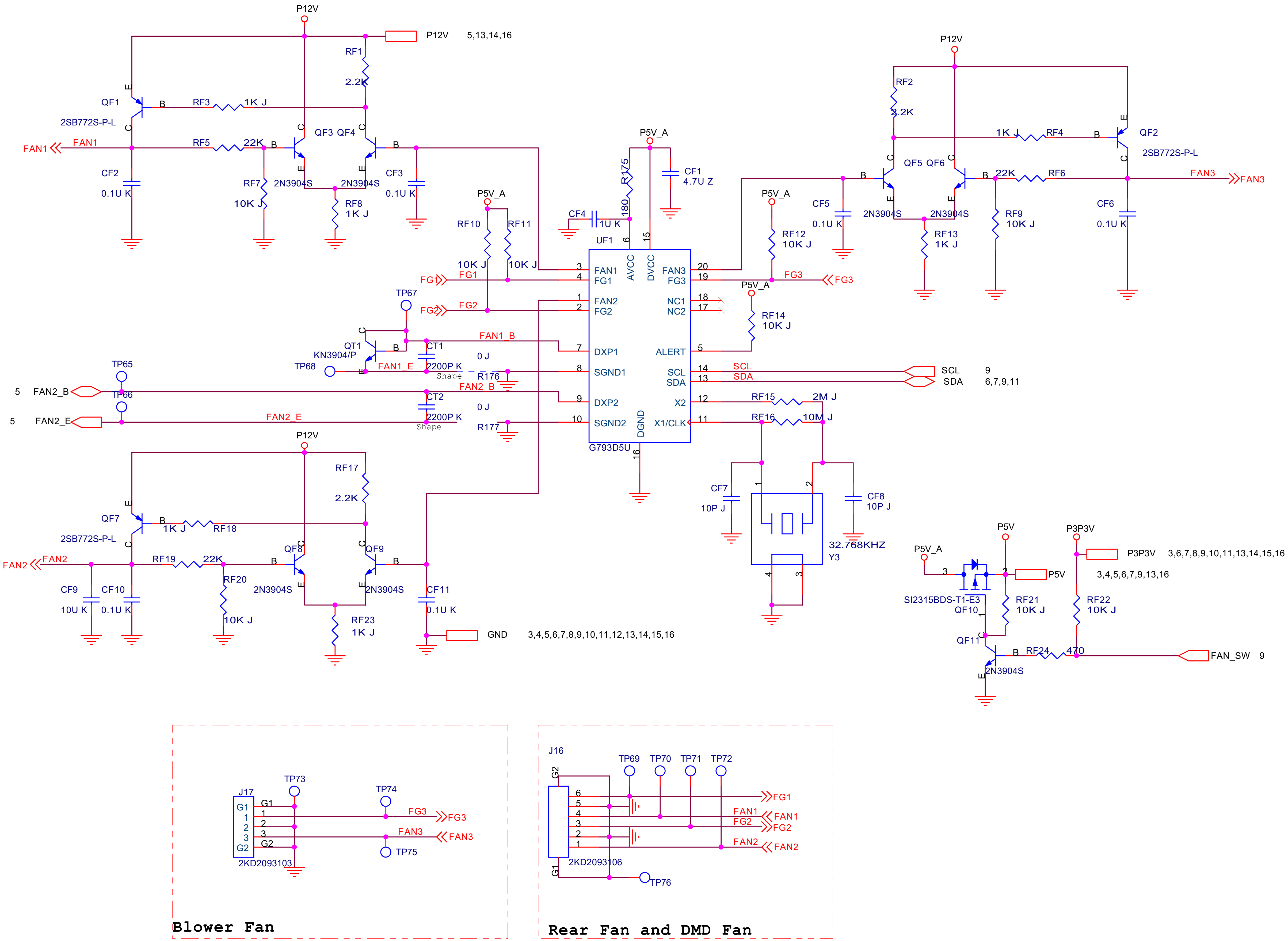
ViewSonic Corporation

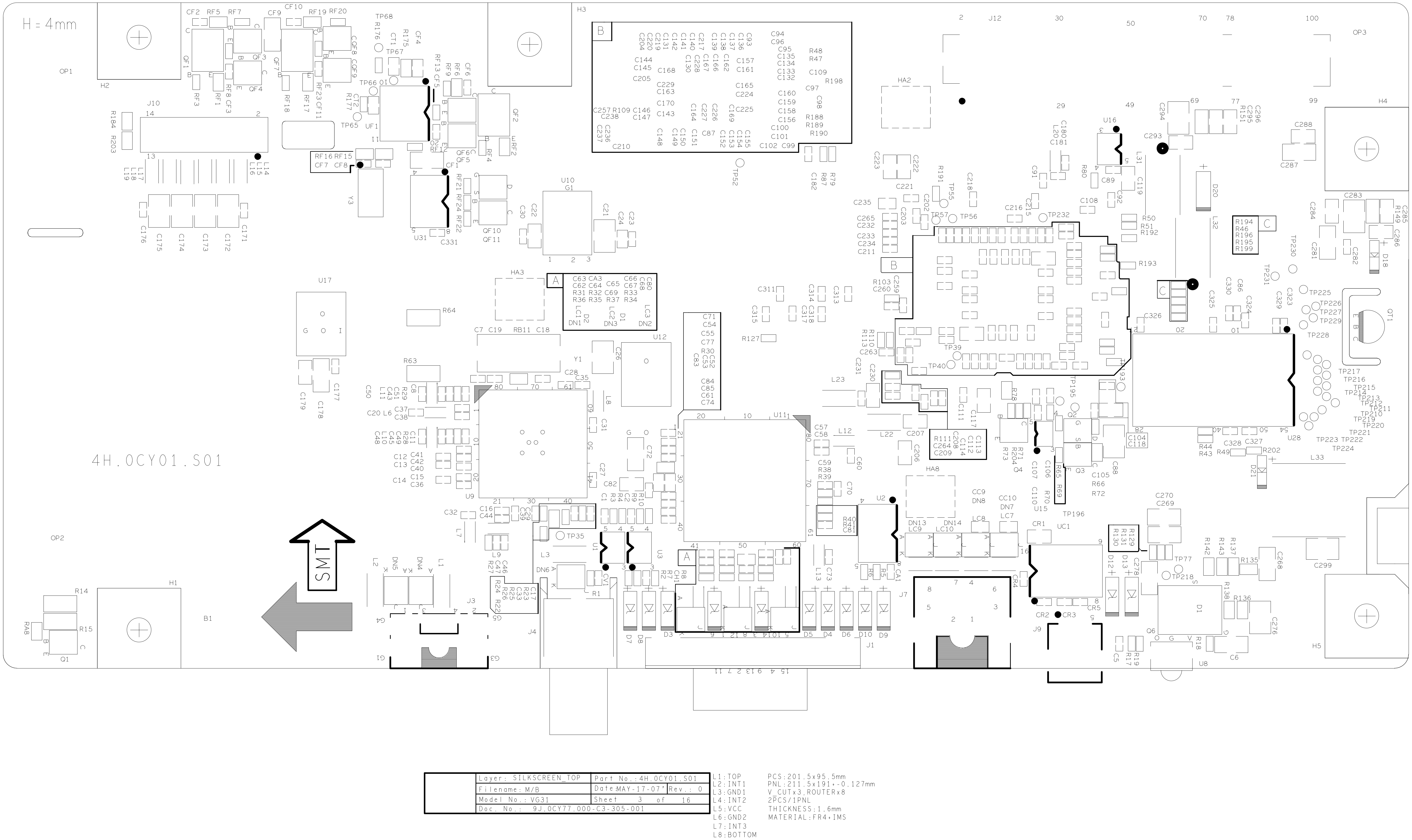
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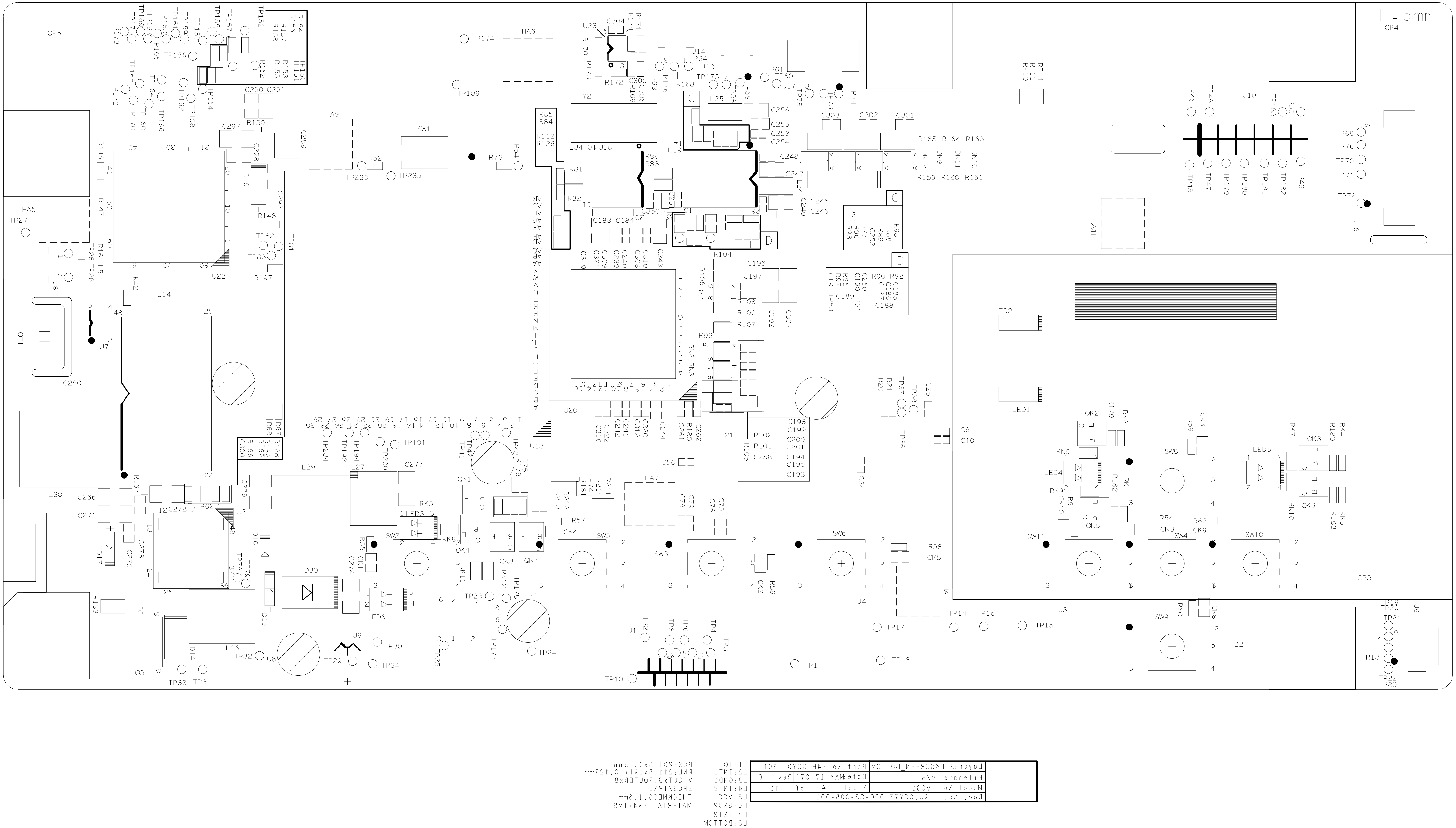
PJ513D-1

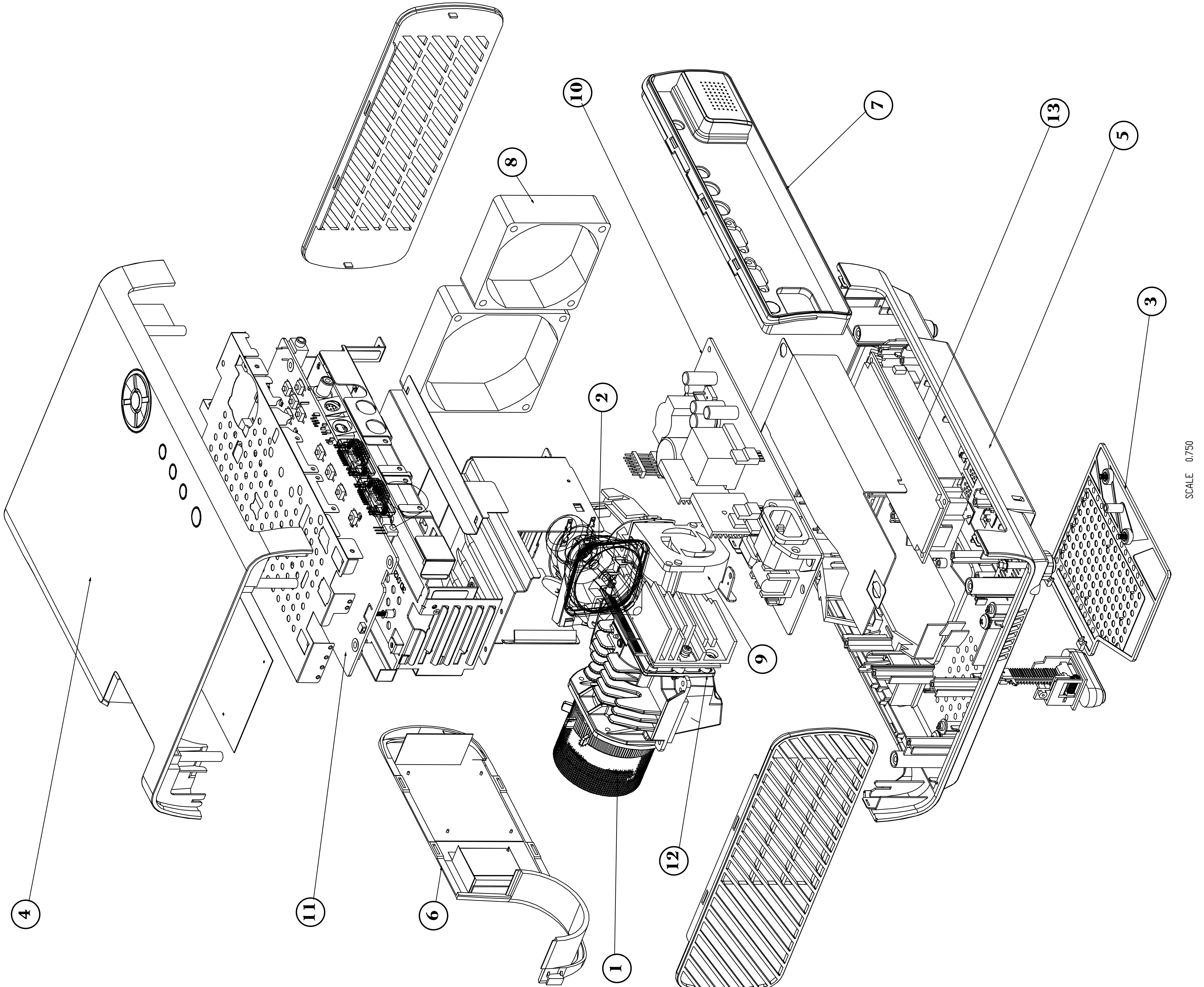

U13D
DDP2230
(DMD I/F)
J12
2KC1001100
P3P3V
TP109
VCC2
GND
SSP0_CSZ1
EXT_ARSTZ
R152
3.3K J
R153 33 J
R155 33 J
DMD_MODE_B
SSP0_CSZ1_DMD
R154 OPEN
DMDSPAR0
SSP0_RXD_DMD
SSP0_CLK_DMD
SSP0_TXD_DMD
SSP0_RXD 13
SSP0_CLK 9
SSP0_TXD 9
MBRST[15:0]
MBRST[15:0] 14
H2
H1
H3
H4
H5
HOLE-V8
Screw Holes
B MARK
B1
B2
OP1
OP2
OP3
OP4
OP5
OP6
OP7
OP8
OP9
OP10
OP11
OP12
OP13
OP14
Optical Points
EMI Solution


P12V
5,13,14,17
DN9
DN10
DN11
DN12
BAT54SW
U21C
PMD1000
OSC
VBB3
VM
VMSW
GMIN
OUTA
OUTB
OUTC
CTAP
TACH
SENSE
GND
Thermal Pad
OCLKA
CW_PWM
R159
R160
R161
R162 3.3K J
P3P3V
3,6,7,8,9,10,11,13,14,15,17
PMD1K_SENSE_MOT
R167 1.5 F
L33 33U
C299 22U K
D21 PMEG2020EJ
TP62
R166 10K J
C300 0.1U K
R163 150 J
R164 150 J
R165 150 J
OUTC_SNUB
OUTB_SNUB
OUTA_SNUB
C301 1000P J
C302 1000P J
C303 1000P J
TP175
J13
CWY1
CWY2
CWY3
CWCTR
2KK2084004
TP58
TP59
TP60
TP61
P5V
3,4,5,6,7,9,13,17
CWSENSOR
OPDIODE
R168 180
TP63
TP64
TP176
J14
2KL2021003
R169 75K J
R170 2K J
CWINDEXA
CWINDEXA 9
U23
INPUT+
VCC
INPUT-
OUTPUT
ADCMP370AKSZ-REEL
C304 0.1U K
C305 0.1U K
C306 10P J
R172 10K J
R173 330K J
R171 10K J
2.5VREF
R174 6.8K
GND
3,4,5,6,7,8,9,10,11,12,13,14,15,17


P12V
P12V 5,13,14,16
RF1 2.2K
QF1 2SB772S-P-L
RF3 1K J
FAN1
RF5 22K
QF3 QF4
2N3904S
CF2 0.1U K
RF7 10K J
RF8 1K J
CF3 0.1U K
P5V_A
R175 180
CF1 4.7U Z
CF4 1U K
UF1
RF10 10K J
RF11 10K J
FG1
FG2
TP67
QT1 KN3904/P
TP68
CT1 2200P K
R176 0 J
FAN1_B
FAN1_E
FAN2_B
FAN2_E
TP65
TP66
CT2 2200P K
R177 0 J
FAN1 FG1 FAN2 FG2 DXP1 SGND1 DXP2 SGND2
AVCC DVCC DGND
FAN3 FG3 NC1 NC2 ALERT SCL SDA X2 X1/CLK
G793D5U
SCL 9
SDA 6,7,9,11
RF12 10K J
RF14 10K J
FG3
RF15 2M J
RF16 10M J
CF7 10P J
CF8 10P J
32.768KHZ Y3
P12V
RF2 2.2K
QF2 2SB772S-P-L
RF4 1K J
QF5 QF6
RF6 22K
FAN3
CF5 0.1U K
CF6 0.1U K
RF9 10K J
RF13 1K J
RF17 2.2K
QF7 2SB772S-P-L
RF18 1K J
QF8 QF9
FAN2
RF19 22K
RF20 10K J
CF9 10U K
CF10 0.1U K
CF11 0.1U K
RF23 1K J
GND 3,4,5,6,7,8,9,10,11,12,13,14,15,16
P5V_A
P5V
P3P3V
P3P3V 3,6,7,8,9,10,11,13,14,15,16
P5V 3,4,5,6,7,9,13,16
SI2315BDS-T1-E3 QF10
RF21 10K J
RF22 10K J
QF11 2N3904S
RF24 470
FAN_SW 9
J17
TP73
TP74
TP75
FG3
FAN3
2KD2093103
Blower Fan
J16
TP69 TP70 TP71 TP72
FG1
FAN1
FG2
FAN2
2KD2093106
TP76
Rear Fan and DMD Fan


H = 4mm
4H.0CY01.S01
SMT
Layer: SILKSCREEN_TOP
Part No.: 4H.0CY01.S01
Filename: M/B
Date:MAY-17-07' Rev.: 0
Model No.: VG31
Sheet 3 of 16
Doc. No.: 9J.0CY77.000-C3-305-001
L1:TOP
L2:INT1
L3:GND1
L4:INT2
L5:VCC
L6:GND2
L7:INT3
L8:BOTTOM
PCS:201.5x95.5mm
PNL:211.5x191+-0.127mm
V_CUTx3,ROUTERx8
2PCS/1PNL
THICKNESS:1.6mm
MATERIAL:FR4+IMS





1
2
3
4
5
6
7
8
9
10
11
12
13
SCALE 0.750

EXPLODED PARTS LIST (PJ513D-1)

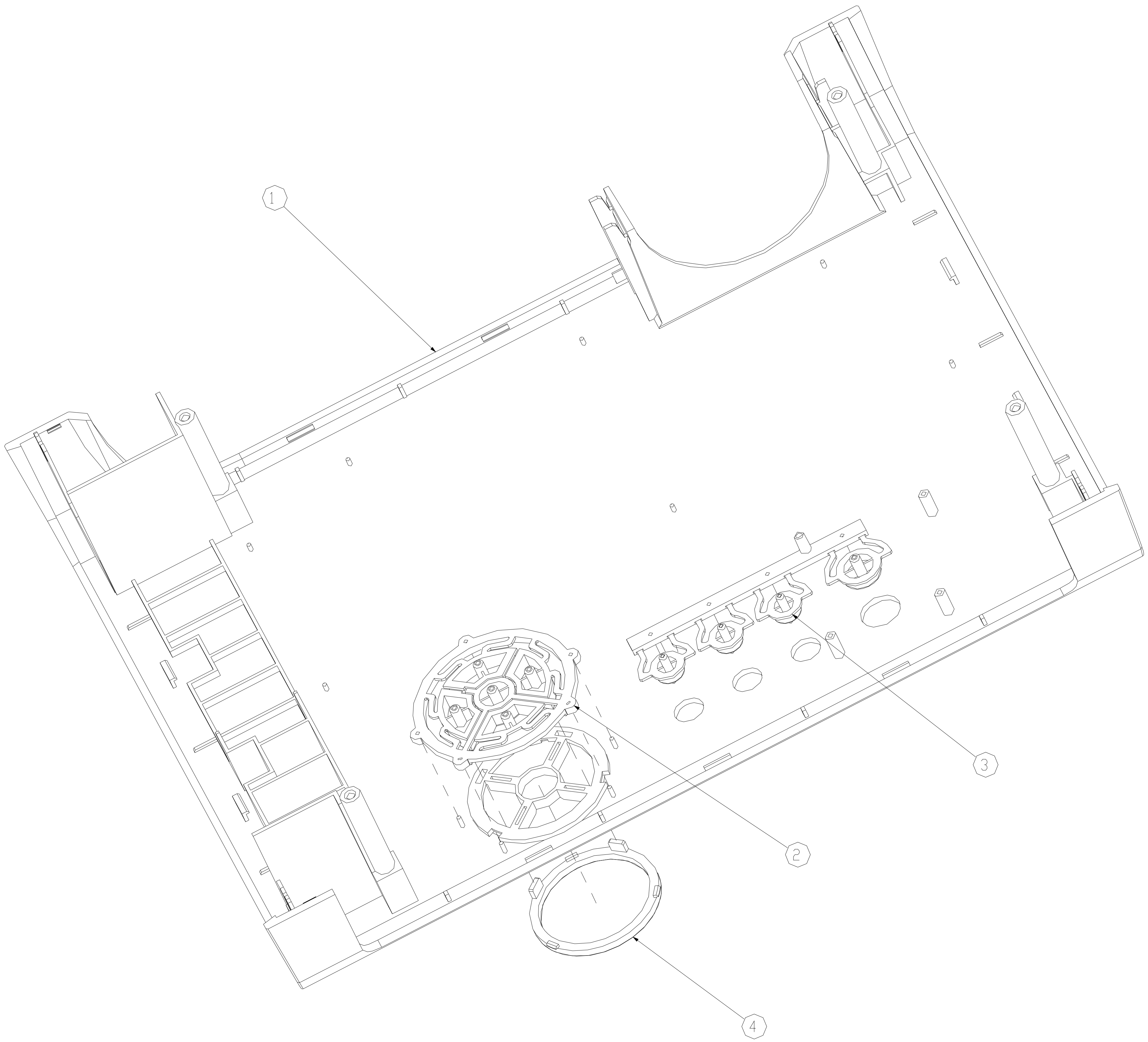
ViewSonic Model Number: VS11959

Rev: 1a

Serial No. Prefix: QTY

Item	ViewSonic P/N	Ref. P/N	Description	Q'ty
1	M-00008166	6E.06001.001	ASSY PL ZOOM MP612 AOCI	1
2	RLC-035	5J.0EB01.001	PACK LAMP RLC-035	1
3	HW-00008365	6K.0EB12.001	ASSY SUB LAMP DOOR WHT PJ513D	1
4	C-00008740	6K.0EB06.001	ASSY UPPER CASE PJ513D	1
5	C-00008742	6K.0EB07.001	ASSY LOWER CASE PJ513D	1
6	C-00008744	6K.0EB08.001	ASSY FRONT COVER PJ513D	1
7	C-00008746	6K.0EB09.001	ASSY REAR COVER PJ513D	1
8	M-00008164	2C.10130.051	FAN*2 70*80*25 30MM AD0712MB	1
9	M-00008165	2C.10139.031	FAN50*50*20 200MMAB5012HBMP511	1
10	B-00008774	5E.08040.011	PCBA POWER BD MI MP511+	1
11	B-00008775	5E.0EB01.001	PCBA MAIN BD PJ513D MI 8L	1
12	B-00008776	5E.06023.001	PCBA CHIP BD MP612 MI	1
13	B-00008777	5D.0CY12.001	BALLAST 180W 2.5KV EUC180DV11	1

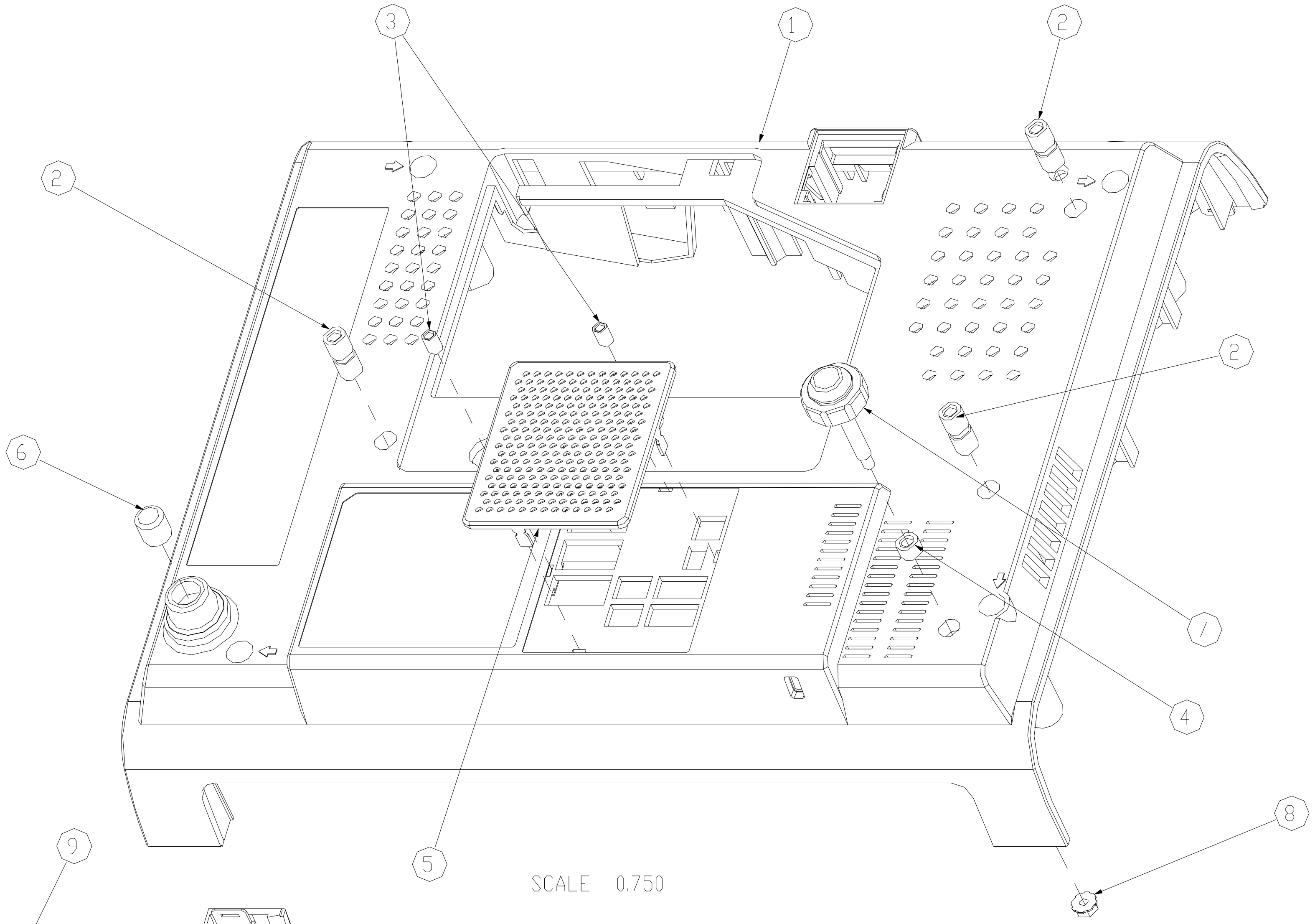
Module 2 –ASSY UPPER CASE

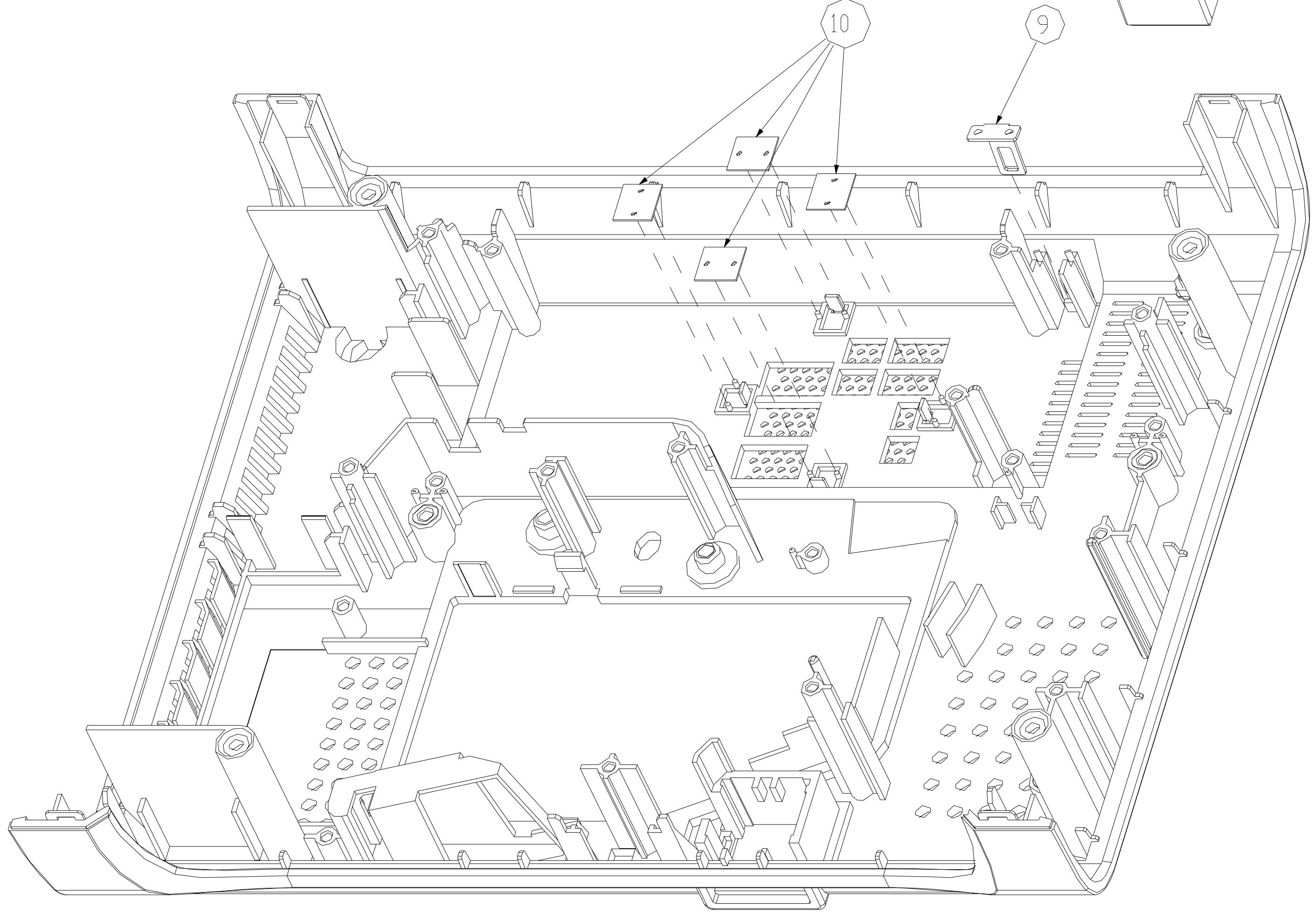


ITEM	PART NO.	DESCRITION	Q'TY	REMARK
1	3J.03A01.032	CASE UPPER PC WHITE PJ513D	1	
2	4B.03A01.011	KEY FUNCTION ABS VG31	1	HEAT MELT WITH 3J.03A01.032
3	4B.03A02.002	KEY MODEL ABS VG30	1	HEAT MELT WITH 3J.03A01.032
4	4B.03A03.001	LENS LED PC VG30	1	

Module 3 –ASSY LOWER CASE

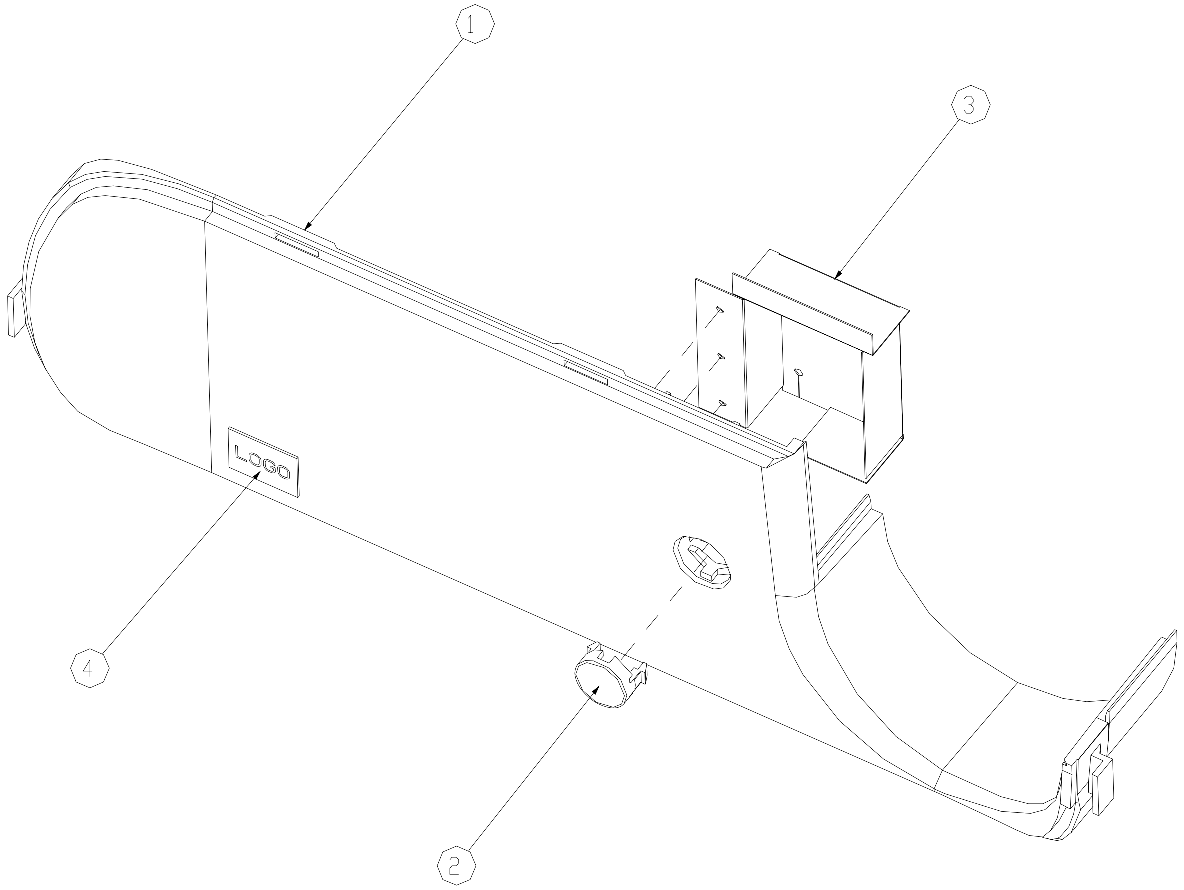
ITEM	DESCRIPTION	Q'TY	REMARK
1	CASE LOWER PC WHITE PJ513D	1	
2	NUT INSERT M4x15L D6.3 BRASS	3	MOLD IN 3J.0EB01.001
3	NUT INSERT M3x6L D4 BRASS	2	MOLD IN 3J.0EB01.001
4	NUT INSERT M4x4.8L BRASS	1	MOLD IN 3J.0EB01.001
5	MESH LOWER CASE SECC VG31	1	
6	RUBBER PAD REAR FOOT W100	1	
7	FOOT REAR ADJUST W100	1	
8	NUT HEX+WASHER M3x2.3H NI	1	1.ASSEMBLY WITH 4G.J1S05.001 2.AFTER ASSEMBLY WITH 4G.J1S05.001, USES GULE TO FIX THE NUT
9	BRACKET K-LOCK SECC MP610	1	HEAT MELT WITH 3J.0EB01.001
10	MYLAR MESH LOWER CASE PC VG31	4	HEAT MELT WITH 3J.0EB01.001





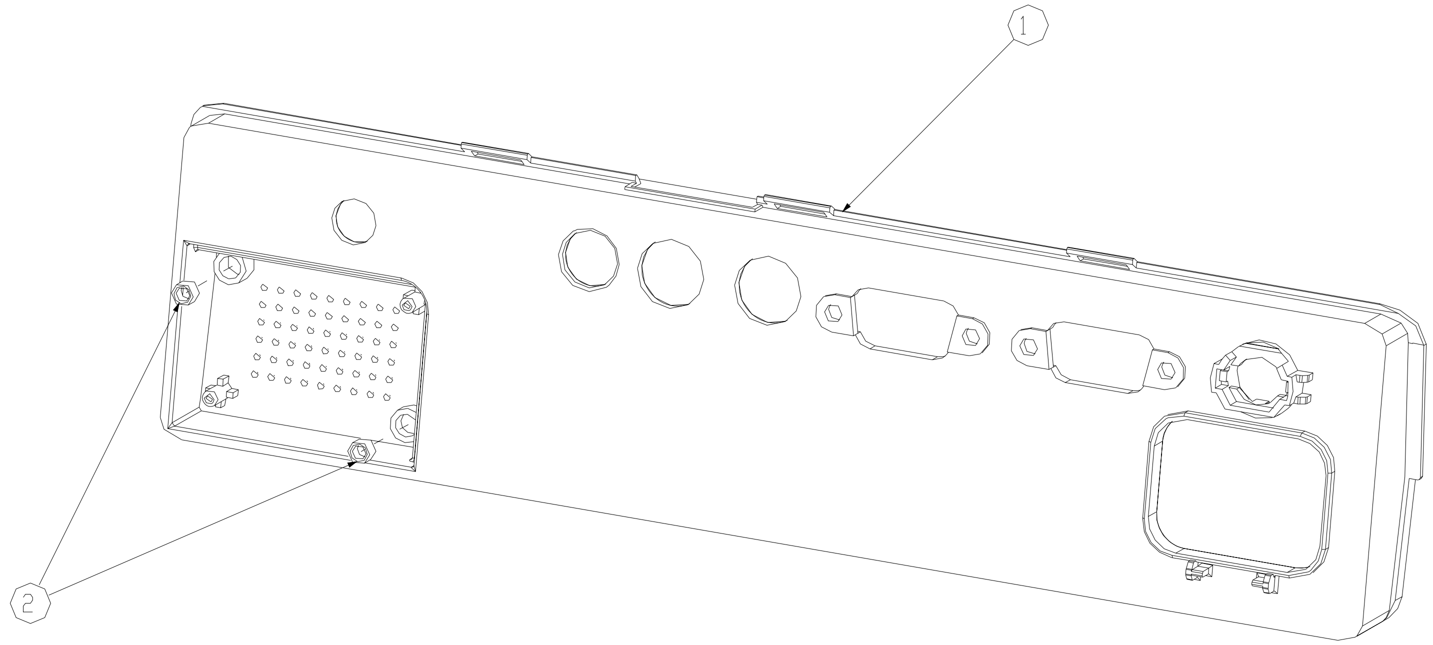
Module 4 –ASSY FRONT CASE

ITEM	DESCRIPTION	Q'TY	REMARK
1	COVER FRONT PC+ABS WHT PJ513D	1	
2	LENS IR FRONT PC WHITE VG30	1	
3	MYLAR IR COVER PC VG30	1	HEAT MELT WITH 3J.03A05.031
4	STICKER LOGO VIEWSONIC	1	



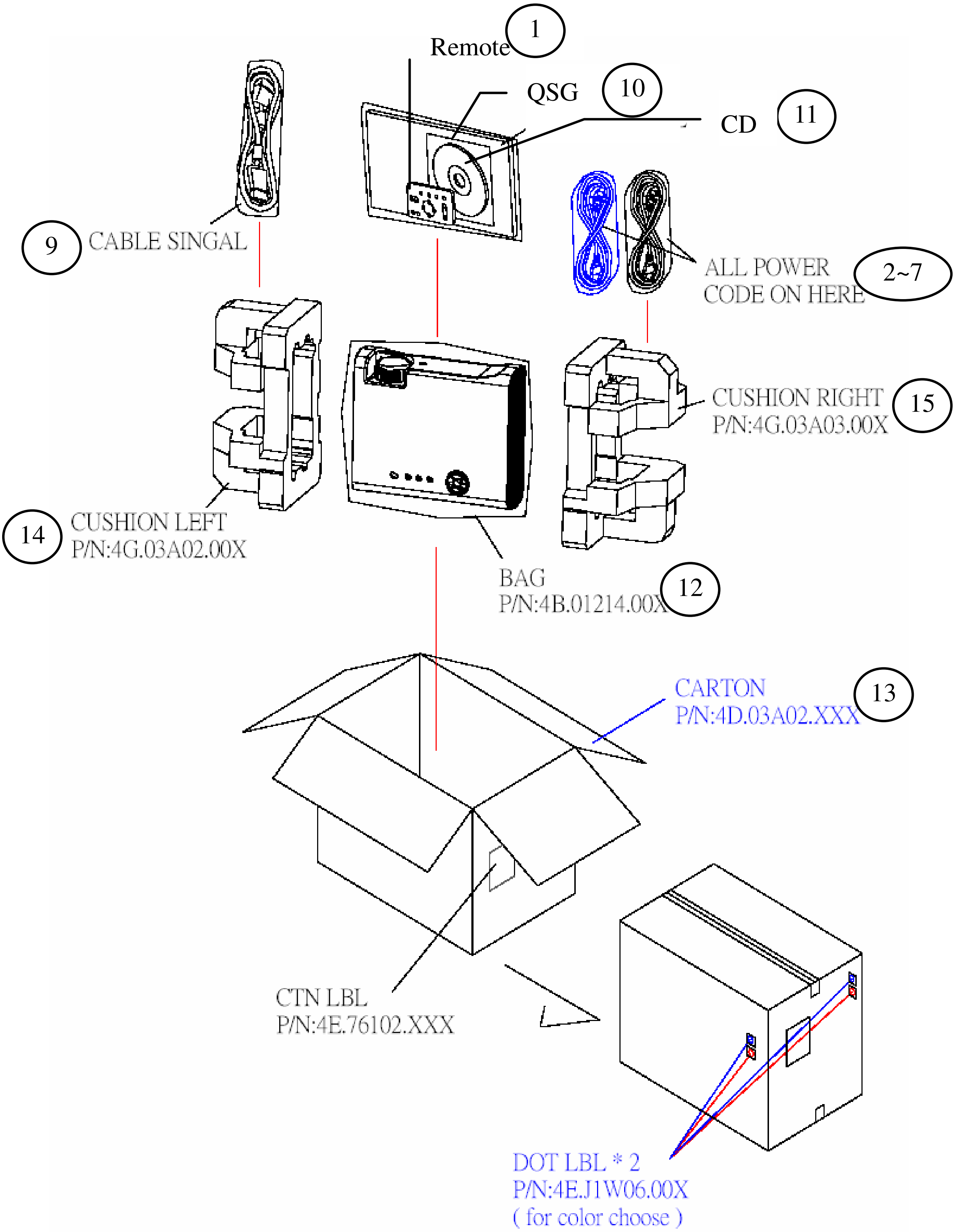
Module 5 –ASSY REAR CASE

ITEM	PART NO.	DESCRIPTION	Q'TY	REMARK
1	3J.0CY01.001	COVER REAR PC+ABS PJ513D	1	
2	8G.00031.3R0	NUT INSERT M3x3L D4 BRASS	2	MOLD IN

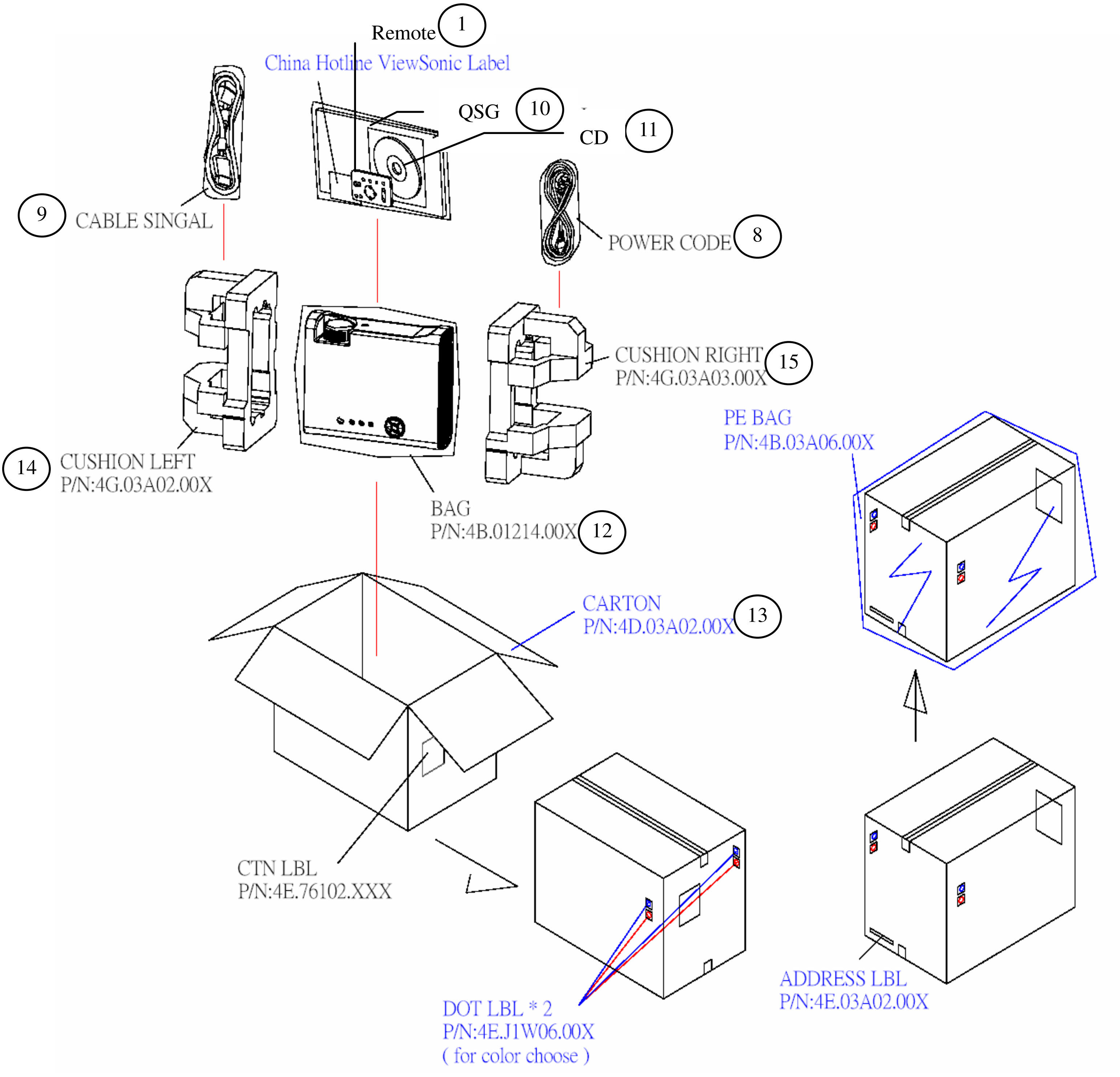


SCALE 1.000

For Worldwide:



For China:



Remote
1
China Hotline ViewSonic Label
QSG
10
CD
11
9
CABLE SINGAL
POWER CODE
8
CUSHION RIGHT
P/N:4G.03A03.00X
15
PE BAG
P/N:4B.03A06.00X
14
CUSHION LEFT
P/N:4G.03A02.00X
BAG
P/N:4B.01214.00X
12
CARTON
P/N:4D.03A02.00X
13
CTN LBL
P/N:4E.76102.XXX
ADDRESS LBL
P/N:4E.03A02.00X
DOT LBL * 2
P/N:4E.J1W06.00X
(for color choose)

PACKING PART LIST (PJ513D-1)

ViewSonic Model Number: VS11959

Rev: 1a

Item	ViewSonic P/N	Ref. P/N	Location	Q'ty
1	A-00008249	5F.26J1K.121	REMOTE RC-7092A-01-0003 PJ513D	1
2	A-00008250	2G.01111.001	CORD SVT125V WO/SH US 1.8M I-S	1
3	A-00008097	2G.82718.281	CORD H05VV-F 10A250V EUR BLK	1
4	A-00008098	2G.01018.000	CORD H05VV-F13A250V 1830MM UK	1
5	A-00008099	2G.01343.001	CORD 3ASL/75DU-IN 250V1.8M AUS	1
6	A-00008193	2G.04321.001	CORD H05VV 250V 1.8M BLK KOR	1
7	A-00008251	2G.01433.001	CORD H05VV 16A 250V 1.5M S-ARF	1
8	A-00008100	2G.04245.001	CORD RVV 250V 1.8M BLK CHINA	1
9	CB-00008120	5K.01207.501	CABLE SIGNAL 15/15P 1.8M+PEBAG	1
10	DC-00008708	4J.0EB01.001	GUIDE QS PJ513D	1
11	DC-00008747	5B.0EB01.002	CD USER MANUAL PJ513D	1
12	P-00008300	4B.01214.001	BAG HDPE+LDPE 415*365*0.4	1
13	P-00008790	4D.03A02.021	CTN AB VIEWSONIC/ PJ513D	1
14	P-00008302	4G.03A02.001	CUSHION LEFT EPE VG30	1
15	P-00008303	4G.03A03.001	CUSHION RIGHT EPE VG30	1

RECOMMENDED SPARE PARTS LIST (PJ513D-1)

ViewSonic Model Number: VS11959

Rev.: 1a

Serial No. Prefix: QTY

Item	Description		ECR/ECN	ViewSonic P/N	Ref. P/N	Location	Universal number#
1	**Accessories:**	Remote Control - 7092A-01-0003		A-00008249	5F.26J1K.121		
2	**[Adapter, Remote**	Replacement Lamp		RLC-035	5J.0EB01.001		
3	**Control;Power**	Cord/ Cable-125V WO/SH 1.8M US		A-00008250	2G.01111.001		
4	**Cord]**	Cord/Cable 250V Black EUR		A-00008097	2G.82718.281		
5		Cord/Cable 1830MM UK		A-00008098	2G.01018.000		
6		Cord/Cable - 250V 1.8M AUS		A-00008099	2G.01343.001		
7		Cord/Cable 250V 1.8M Black CHINA		A-00008100	2G.04245.001		
8		Cord/Cable 250V 1.8M Black KOR		A-00008193	2G.04321.001		
9		Cord/Cable 250V 1.5M S. AFR		A-00008251	2G.01433.001		
10	**PC Board**	PSU - Supply Board MI MP511+		B-00008774	5E.08040.011		
11	**Assembly: [All**	Main Board MI 8L		B-00008775	5E.0EB01.001		
12	**PCBA]**	Sub Board- CHIP BD MP612 MI		B-00008776	5E.06023.001		
13		Sub Board (Ballast 180W 2.5KV)		B-00008777	5D.0CY12.001		
14	**Cabinets: [Front**	Upper Case Assy		C-00008740	6K.0EB06.001		
15	**Panel, All Covers,**	Upper Case Assy, Black		C-00008741	6K.0EB06.011		
16	**Base Assembly]**	Lower Case Assy		C-00008742	6K.0EB07.001		
17		Lower Case Assy, Black		C-00008743	6K.0EB07.011		
18		Front Cover		C-00008744	6K.0EB08.001		
19		Front Cover Black		C-00008745	6K.0EB08.011		
20		Back Cover		C-00008746	6K.0EB09.001		
21		Back Cover, Black		C-00008747	6K.0EB09.011		
22		Cover - (Sub Lamp Door) - MP510		C-00008291	6K.01222.001		
23		Cover - (Sub Lamp Door), Black		C-00008748	6K.0EB12.011		
24	**Cables: [All Cables]**	Signal Cable 15/15P 1.8M, +PE Bag		CB-00008120	5K.01207.501		
25	**Documentation:**	Quick Start Guide		DC-00008708	4J.0EB01.001		
26	**[Quick Start Guide,**	CD-Rom		DC-00008709	5B.0EB01.001		
27	**Electronic**	Pack CW Module		E-00008707	CS.5J080.001		
28	**Components: [CRT-**	Pack LP Module		E-00008708	CS.5J080.011		
29	**EEPROM, Fly Back**	Integrated Circuit DMD 0.55 SVGA		E-00008709	7A.08060.D00		
30	**Miscellaneous:**	Fan *2 70*80*25 30MM		M-00008164	2C.10130.051		
31	**[Switch, Fan, Logo]**	Fan 50*50*20 200MM		M-00008165	2C.10139.031		
32		ZOOM Assy, MP612 AOCI		M-00008166	6E.06001.001		
33	**Packing Material:**	Bag		P-00008300	4B.01214.001		
34	**[Box, Foam, Bags]**	Carton		P-00008790	4D.03A02.021		
35		Left Foam		P-00008302	4G.03A02.001		
36		Right Foam		P-00008303	4G.03A03.001		

Remark 1: Above listed items are examples, supplier can expand the rows to add more necessary items.

Remark 2: All revised RSPLs with newly added items or any change made should be highlighted and correlated with the ECN/ECR approved by ViewSonic Corporation. This is to eliminate repeated cross checks of each item

* *Reader's Response**

Dear Readers:

Thank you in advance for your feedback on our Service Manual, which allows continuous improvement of our products. We would appreciate your completion of the Assessment Matrix below, for return to ViewSonic Corporation.

Assessment

A. What do you think about the content of this Service Manual?

Unit	*Excellent*	*Good*	*Fair*	*Bad*
1. Precautions and Safety Notices				
2. Specification				
3. Front Panel Function Control Description				
4. Circuit Description				
5. Adjustment Procedure				
6. Troubleshooting Flow Chart				
7. Block Diagrams				
8. Schematic Diagrams				
9.PCB Layout Diagrams				
10. Exploded Diagram and Exploded Parts List				
11. Recommended Spare Parts List				

B. Are you satisfied with this Service Manual?

Item	*Excellent*	*Good*	*Fair*	*Bad*
1. Service Manual Content				
2. Service Manual Layout				
3. The form and listing				

C. Do you have any other opinions or suggestions regarding this service manual?

Reader's basic dada:

Name:		**Title:**	
Company:			
Add:			
Tel:		**Fax:**	
E-mail:			

After completing this form, please return it to ViewSonic Quality Assurance in the USA at facsimile 1-909-839-7943. You may also e-mail any suggestions to the Director, Quality Systems & Processes (marc.maupin@viewsonic.com)